



**UNIVERSITY OF
BIRMINGHAM**

**THE INTRODUCTION OF THE NEW SYMPTOM SPECIFIC OBSTETRIC
TRIAGE SYSTEM (SOTS) IN AN ACUTE CARE TRUST: AN EXAMINATION OF
THE VIEWS AND EXPERIENCES OF MIDWIVES**

By

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ABSTRACT

BACKGROUND

A need to develop a standardised triage system to prioritise clinical urgency of women when attending a maternity triage department has been identified. This study explores the views and experiences of midwives involved in the implementation of such a system.

METHOD

Focus groups and questionnaires were used to investigate midwives' views and experiences of the implementation of the Symptom Specific Obstetric Triage System (SOTS). Thematic analysis of the focus group data was undertaken and descriptive statistics from the questionnaire responses were collated.

RESULTS

Focus groups were held with midwives (N=12) and questionnaires were sent to all midwives (N=79): response rate =67%. These demonstrated midwives felt the new system had been introduced well and helped them manage and organise the department. They felt patient safety had improved and the system allowed them to use their clinical judgment. It also highlighted issues that needed to be changed.

CONCLUSION

Implications for the future use of SOTS and implementation in other trusts include: changes are required to the documentation and pain score but the SOTS was useful for some for managing the department and the workload and still allowed the use of clinical judgment for most midwives. Clinicians are excellent at problem solving and their views and experiences are valuable in service improvement initiatives.

DEDICATION

To my wonderful family and friends, especially my mother and father. Thank you for always being there for me.

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1 INTRODUCTION

Research is essential to improve services and make care more efficient in the National Health Service [NHS], in order to provide the best care for service users (Department of Health [DH], 2006). Professionals are required to provide evidence based care (Royal College of Midwives [RCM], 2012, Nursing and Midwifery Council ([NMC], 2008, Sackett et al, 2000). Guidelines and protocols also need to be based on best practice and evidence (National Institute for Health and Care Excellence [NICE], 2013). In the Emergency Department [ED] research has been undertaken to investigate how patient safety assessments can be made more effective (Adams and Fontanarosa, 1996). There was pressure on EDs with demands to shorten waiting times and manage patient flow safely, leading to the development of standardised triage systems, making assessments reproducible and auditable (Mackway-Jones et al, 2006). However, no such systems have yet been applied to emergency care in maternity departments. Dennett and Baillie (2002) suggest that the increasing demands on delivery suites require new systems to be designed to respond to such demands. They argue that most cases of litigation concern NHS maternity services and that without a triage department low risk women in labour may not receive the one to one care they require. There is a need to bridge the divide between research and practice (Straus et al, 2011) this requires evaluation of services developed to improve care for women and babies (DH, 2006).

The birth rate is increasing each year in England which means resources such as staff and beds are under pressure. There were 694,241 live births in England in 2012, with the birth

rate at its highest level for forty years, making it the most common reason for admission to hospital (National Audit Office [NAO], 2013). Providing a standardised triage process could improve the quality and safety of the service with appropriate assessment, support and continuity of care. The Centre for Maternal and Child Enquiries [CMACE] (2011) and local audit (Clarke et al, 2010) demonstrated the need for early recognition of mothers that are unwell and a standardised approach to care in triage. Therefore the new standardised Symptom Specific Obstetric Triage System [SOTS] (the name of the system has been adapted for the purpose of this study to protect anonymity) was developed by staff at the trust and local university and now needs to be evaluated. Evaluation is a key element of the change process: - without this the effectiveness of the change cannot be assessed and we cannot learn from it to inform further change (NICE, 2007a). Iles and Cranfield (2004) recommend reflection and evaluation of change, as well as considering how the changes might be applied to different settings. This study reports data collected using focus groups and questionnaires about midwives' views and experiences of the implementation and use in practice of a standardised triage assessment tool to prioritise women's care based on clinical need. It also provides some broader insights into the management of change in maternity care.

A brief summary of triage in healthcare is presented, followed by a description of the acute care trust study site triage department before the implementation of the new SOTS, along with a brief description of SOTS. A review of the literature critically examines and analyses previous research in this area. The methods used to collect data for this study are described in

detail, followed by an analysis of the data. The findings are then discussed and implications for practice identified. Finally a conclusion will summarise what has been learnt from this study and what adjustments to the triage system are required before it is implemented into other hospitals. Possible areas for further research are also identified.

1.1 BACKGROUND

1.1.1 Triage in Healthcare

Triage was first applied on the battlefield to rapidly prioritise limited medical treatment and supplies to those most in need and is now used in acute hospitals to evaluate and classify patients needing emergency care (Adams and Fontanarosa, 1996). A structured process for Triage was first introduced in Emergency Departments [ED] in Australia over 20 years ago using the Australian Triage System [ATS] and is now used nationwide in Australia (McCarthy et al, 2012). The ATS formed the basis of the Manchester Triage System [MTS] developed in 1997 and the Canadian Triage and Acuity Scale [CTAS] developed in 1999 (Fitzgerald et al, 2010). The most commonly used system in the United States is the Emergency Severity Index [ESI] (Fitzgerald et al, 2010). In the United Kingdom the MTS, developed by a multidisciplinary consensus group, was introduced into ED departments. It uses algorithms and consists of 52 flow charts specific to the patient's presenting problem to determine a triage category (Van Veen et al, 2008; Cooke and Jinks, 1999). Based on the assessment and clinical need, the patient is allocated to one of five categories, each with a specific time frame in which they need a secondary assessment, and pain is assessed using a pain score. Triage should be effective and timely, requiring a system that is valid and reliable

(Twomey et al, 2007). Triage is beneficial in healthcare to improve patient flow, waiting times and safety outcomes for patients (Mackway-Jones et al, 2006). ‘Triage is a system of clinical risk management employed in Emergency Departments worldwide to manage patient flow safely when clinical need exceeds capacity’ (Mackway-Jones et al, 2006, p1). “Early detection of severe illness in mothers remains a challenge to all involved in their care” The Centre for Maternal and Child Enquiries [CMACE] (2011, p.11). CMACE (2011) also identified the need for early recognition, immediate and appropriate care for women with serious medical/obstetric conditions. These are potential benefits a standardised triage system could provide for maternity services providing timely recognition, treatment and referral. Midwives are the main healthcare professionals using this system therefore an investigation of their views and experiences of the introduction of triage in the maternity setting would be hugely informative and is necessary if the facilitators and barriers to its introduction are to be understood.

1.1.2 Setting for the Study

The acute trust where this study was conducted has over 8,000 births per year (and increasing) and is a regional referral centre for the county. The function of the Triage department in each maternity unit differs and can include day cases, scans and early care of women being induced, as well as assessment of women in labour and Category X women. Category X describes women who need assessment for a problem in pregnancy, but who are not in labour and do not require admission (Molloy and Mitchell, 2010). In this acute care trust the triage department is separate from delivery suite and is used to assess Category X

and labouring women in order to avoid unnecessary admission to delivery suite beds. The Triage department assesses women from 17 weeks to term, including the six week postnatal period, for varying conditions and they are either self-referred or referred by a health care professional. Triage is normally staffed with a Band 7 midwife and a Band 6 midwife and senior house officer cover is available 24 hours a day. However, they also staff delivery suite so can often be called away. Senior doctors are available for support and review on the delivery suite if a more senior opinion is required.

1.1.3 Development of the Symptom specific Obstetric Triage System (SOTS) and the importance of triage in midwifery

Historically there has been no standardised system in the triage department of this acute trust, women were generally seen in order of arrival rather than based on their clinical need. This left some women waiting long periods of time before assessment, potentially putting them and their babies at risk, and therefore a new standardised system was developed. The SOTS was based on the MTS system which has been extensively validated and is widely used in UK ED (Fitzgerald et al, 2010). The SOTS was developed by the two leads for the project (a Senior Lecturer from the University and the Consultant for delivery suite) in consultation with a development group [DG]. The DG consisted of senior midwives who all regularly work in the existing triage department. The development group met regularly to refine the system and test it out before its implementation into practice. They developed the initial assessment and symptom specific algorithms which were then agreed by all the consultants at the trust. An advisory group was also formed.

The SOTS consists of a standard initial clinical assessment and an algorithm based system which is specific for the conditions the women present with. Based on condition and vital signs a time frame is assigned for review by the midwife or medical staff in attendance, depending on urgency and condition. The symptom specific conditions include Abdominal Pain, Antenatal Bleeding, Hypertension, Postnatal, Ruptured Membranes, Reduced Fetal Movements, Suspected Labour and Unwell or Other. Following the initial assessment, a traffic light system is used to categorise women into time frames within which they need to be seen, depending on the clinical urgency of their condition. Women categorised as Red go immediately into delivery suite, Orange category women have a full assessment and plan of care within 15 minutes, those categorised as Yellow within an hour and those categorised as Green within 4 hours.

This new system was introduced in April 2013 following training for core staff on delivery suite. The two leads on the SOTS project and champions from the DG were available for any queries staff had about its introduction. Staff could also feedback on any issues that needed to be resolved via these members or a comments book. As part of the main SOTS service evaluation an extensive programme of study was put in place to investigate the introduction of the SOTS and its value in practice. This included a staff training programme, with evaluation immediately after the initial training and then three months later. Women's experiences of the system were assessed in a questionnaire. An audit of the notes made pre- and post-implementation of the system was carried out. Also, an inter-rater reliability study was undertaken (**Appendix 1**).

However the midwives' views were not being taken into consideration, and these are crucial in the implementation and use of this system in practice. It was important to access their views and experiences of using the system to discover what factors affected its introduction. The NHS Institute for Innovation and Improvement (2006-2013) states staff views should be valued and acted upon to successfully implement change and ensure they accept and participate in the healthcare improvement. Engagement of the workforce is required when introducing change successfully (Spiby et al, 2013). The study reported here was designed to examine the experiences of midwives involved in the implementation of the SOTS. Staff involvement is crucial to the success of organisational change and so there was a need to learn about this from their perspective. Accessing the views of staff about change was also necessary to inform any future plans for wider implementation of the SOTS.

1.2 Research Question

What are midwives' views and experiences of the introduction of the new standardised Symptom specific Obstetric Triage System (SOTS) into an acute care trust?

1.3 Research Aims

The aim of this research study was to examine the views and experiences of midwives using focus groups. These findings could then be more widely tested with the majority of midwives using questionnaires about the introduction of the SOTS in an acute trust in maternity.

2 LITERATURE REVIEW

2.1 Introduction

A systematic review of current literature on a specific topic area is essential for health care professionals to provide evidence based care (Aveyard, 2010; Schneider et al, 2007). Researchers need to be able to search the relevant literature and analyse it critically (McCarthy and O'Sullivan, 2008). The research studies were from peer-reviewed journals where possible as they have been checked for rigour, quality and clarity (Schneider et al, 2007). Systematic reviews can inform important policies which can improve the quality, safety and value of healthcare (Bettany-Saltikov, 2012) which would provide a good basis on which to conduct the study. A systematic approach was used as a full systematic review was not possible with limited resources and only one researcher (Aveyard, 2010). However, a robust approach to locating and critiquing the literature was taken. A search for papers on the views and experiences of midwives using a standardised system in triage to collect and compare data on the views and experiences of midwives (and other healthcare professionals) in the introduction of a standardised triage system was carried out. However, the search criteria had to be widened to include literature discussing obstetric triage as little existed on the subject as a standardised system in triage since one does not exist in the UK and there is even less literature on midwives' views and experiences on the subject.

2.2 Inclusion/Exclusion criteria

Inclusion/Exclusion criteria were based on the Patient/population, Exposure and Outcome [PEO] criteria (Khan et al, 2003). Population included midwives and health care professionals (only nurses and doctors in accident and emergency tertiary departments/acute care trusts). Healthcare professionals were included as very little evidence is available for midwives exclusively. Primary care healthcare professionals were excluded as the study was undertaken in an acute care trust. Articles including women's views and experiences were included when discussing obstetric triage as little literature on midwives' views exists. Exposure included all triage services not just standardised triage tools in maternity in an acute care setting in the UK and all over the world. Primary health care settings, mental health, children and those relating to specific conditions were excluded as not relevant to the study. Specific clinical conditions such as first trimester conditions articles were excluded as outside the remit of this study. Any studies related to Telephone triage were also excluded as not relevant to the study.

The types of studies included were mainly primary qualitative papers; however, all types of research studies were included in the end as there was little literature on the subject. Letters, editorials and dissertations were excluded initially, but some were subsequently included if they discussed the introduction of triage to understand its conception. It became apparent that a standardised triage system does not exist in triage departments in Maternity in the UK. The views and experiences of introducing such a system are unknown which meant it was problematic when conducting the literature review and the inclusion/exclusion criteria had to

be widened. This furthermore highlighted a gap in the literature enhancing the value of this research study.

2.3 Search Strategy

The Databases searched included CINAHL, MEDLINE, MIDIRS, COCHRANE, DARE and NICE evidence. Keywords identified from the research question were used to search the databases for relevant papers. These included: - “midwives attitudes/views/experiences” and “obstetric triage”. No results were found on any of the databases, so it was widened to “obstetric/maternity triage” alone. These words were then combined using the Boolean operators AND/OR to thoroughly search the databases for the keywords to include all relevant literature (Aveyard, 2010).

The search included literature published from 1946-Present day, written in the English language, excluding all non-English papers as the resources were not available for translation. Search Terms included “Obstetric Triage”, “Triage”, ”Midwifery”, “Maternal health services”, “Midwives attitudes”, “Physicians attitudes”, “Clinicians attitudes” and “attitude of health personnel”.

2.4 Search Results

The search results were then examined by title and the abstract was then read in more detail to confirm the paper was relevant to the study (**Appendix 2**). This resulted in 8 research

studies and 14 articles being identified and although they were not research studies they were describing the concept of triage in its early introduction to maternity and the introduction of new triage services in maternity. Therefore the search was widened to include articles that were not only research studies. Titles reviewed-404; abstracts reviewed-50; papers reviewed-15; papers meeting eligibility for inclusion-8 research studies plus 14 articles.

2.5 Quality Assessment

The research articles were critiqued using the Critical Appraisal Skills Programme [CASP] tool (2013a,b) for qualitative and quantitative research (**Appendix 3**): this assesses rigour, credibility and relevance (Chenail, 2011). Pope and Mays (1995) argue a qualitative approach is useful when researching the beliefs of health care professionals, rather than quantitative methods, especially if there is little research in the area. Silverman (2011) states a qualitative approach is required when examining people's views and beliefs to utilise naturally occurring data, rather than quantitative which is more suited to measuring outcomes numerically. Therefore the design of the study needs to be appropriate to explore and reflect individuals' views and experiences on the subject being studied (Denscombe 2010). (See **Appendix 4** for a summary of these studies)

2.6 Triage in Emergency Departments [ED]

A narrative review of the literature was carried out to gain some insight into the standardised triage systems that already exist in ED to provide some background context to the

developments in maternity services. The Manchester Triage System [MTS] is a sensitive tool for the initial assessment of the critically ill patient (Cooke and Jinks, 1999). Gerdtz and Bucknall's (2001) observational study of urgency assessment showed the nurse needs good quality data to make a clinical decision in a timely way whilst using the Australian Triage System [ATS]. This requires education and standardising of triage care at an international level, previously these have been subjective assessments (Gerdz and Bucknall 2001). Gerdtz et al (2009) concluded pregnant women were not consistently triaged when the ATS was applied to pregnant women and specific guidelines and education were needed if triage was to be effective. In a critical review of the literature Fitzgerald et al (2010) concluded that an International Triage Scale (ITS) was required to standardise assessments across ED internationally. No single approach is consistent in assessing urgency (Fitzgerald et al, 2010). To date an international triage system has not been developed.

Christ et al (2010) systematically reviewed the literature examining current triage systems in ED to assess validity and reliability. They concluded that five-level triage systems should be used in practice as they are valid and reliable and are gold standard, making them structured and dependable in ED. They suggest these systems could be used to improve the quality of unstandardised assessments but require careful planning and training in implementation. The Canadian Triage Acuity Scale [CTAS] and the Emergency Severity Index [ESI] have good to very good reliability whereas MTS and ATS have moderate reliability (Christ et al, 2010). Ganley and Gloster (2011) in their overview of triage in the emergency department state the system used prior to the MTS involved both objective and subjective information. This

affected its validity and reproducibility requiring a standardised approach that could be used nationwide. Harding et al (2011) systematically reviewed the literature and concluded triage systems could be used in various health care settings to improve patient flow. However the Centre for Reviews and Dissemination (2013) states there are potential biases in the review process and some poor quality studies were included which could affect the reliability of the findings. This highlights the need for good quality research in this area.

2.7 Triage in Maternity

2.7.1 The Concept of Maternity Triage

A number of articles identified the concept of triage in maternity units from as early as 1996 (Angelini and Menihan, 1996, Angelini, 1999a,b,c,d, Ament, 1999) but only relate to assessing women in early labour, not assessing Category X women using a standardised system in the way the term triage is used in the present study. The purpose of which is to identify immediate health problems, regulate patient flow and utilise resources efficiently (Austin and Calderon, 1999, Mahlmeister and Mullem, 2000). This requires a standardised system to provide assessments of individual cases in the same way. However, currently one does not exist in maternity services in the UK. In discussions of the concept it has been recognized that quality improvement in this area requires the development of good team work and communication, with a systematic problem solving approach. This has implications for safety, cost effectiveness and patient satisfaction (Gerdz et al, 2008). Loper and Hom (2000) state a valid and reliable classification system needs to be developed in maternity.

2.7.2 Descriptions of Triage in Maternity Services

In 2007 Nolan et al and in 2010 Molloy and Mitchell found that although use of the term triage was widespread in the literature, no midwifery research of triage in maternity services in the UK existed nor was there any research into the midwives' ability to triage effectively in the UK (Nolan et al 2007). Nolan et al (2007) state it is imperative to examine these issues to ensure patient safety and address any risk management issues. They suggest more research is required into midwives' perceptions of their role, responsibilities and skills in triage and the effectiveness of the triage process which could help to develop a standardised risk assessment tool. This was also the finding from the present review making it difficult to find any research studies to critically review. Nolan et al (2007) explored audit findings for the first 12 months of an innovation in maternity triage in the north of England to evaluate its effectiveness. However, this was only a relocation of the service but development of a triage assessment tool was recommended. Stand-alone triage units are becoming more common in the UK and need to be evaluated to make sure the care is based on evidence and best practice (Nolan et al, 2007).

There are a number of articles discussing or describing triage services in maternity but not standardised systems. Similarly no evaluative research studies investigating the introduction of triage in maternity services were found. However a number of descriptive studies were identified and reviewed, which are summarized below. Dennett and Baillie (2002) describe the relocation of a triage service in the UK designed to reduce pressures on beds in delivery suite. They reported it improved autonomous practice, job satisfaction, and decision-making

skills whilst reducing stress and pressures on resources, but it was not explained how they came to these conclusions. They state they will be evaluating staff views in the future, but to date this work does not appear to have been reported. Sen and Paterson-Brown (2005) discuss priority care on delivery suites in the UK, explaining that in triage emergencies cannot always be predicted, but recognition and management skills are essential. Streamlining care in triage requires good communication, team work and planning (Sen and Paterson-Brown, 2005). Wright et al (2011) discuss whether triage, which has been successful in A&E in the UK for years, could work in maternity units. The pilot project was the implementation of a triage system of management; this involved the team in developing an admission pro forma in an attempt to reduce inappropriate admissions. They state the new triage was successful due to the whole team embracing the change, good communication and teamwork. Although these articles discussed the impact of triage services on staff such as increasing confidence and skills, job satisfaction and reducing pressures on staff these conclusions are based on anecdotal evidence and few quantitative or qualitative studies exist on staff views and experiences. In a study in America Zocco et al (2007) concluded that the assessment and discharge skills of the assessor were more important than the system in an effective triage, demonstrating the importance of having skilled staff. They also state an efficient triage system is required to regulate patient flow and waiting times.

2.7.3 Symptom Specific Approaches

There is a need to develop systems to prioritise women attending triage appropriately, as some have life threatening conditions whereas some may only have minor problems

(Samangaya et al, 2010). This pilot study in Manchester investigated a maternity priority algorithm based on the ED system that was already in place there, using the colour categories and timed medical reviews already established in the system. They concluded that it was relatively straightforward to apply these algorithms and they had good specificity, but further training was required. This is significant as it was the first time a priority system had been used in maternity triage, although it only uses a single algorithm.

Molloy and Mitchell's (2010) study examined women's views of a maternity triage service introduced in an acute trust in the south-west of England to explore how they could improve practice using questionnaires. The response rate to the women's questionnaires was only 44% limiting the validity of their findings. They do however recommend allowing midwives to work as autonomous practitioners, using their expert skills and knowledge to make clinical decisions and judgments on the women's care. This would require continuing education and support. Unfortunately they did not examine the clinicians' views who were working with the new service about these matters. A review of the literature by Paisley et al (2011) highlighted a comprehensive obstetric acuity tool did not exist in maternity. They designed and now use an acuity tool in the United States; however, it only assesses women in labour, not any other problems faced in obstetrics. Staff views and experiences in the implementation of this tool were not examined; however staff education programmes were redesigned to improve the triage process and assessment of acuity level due to problems with compliance. For obstetric triage to be safe and effective, timely assessment and treatment are required using a valid and reliable obstetric acuity tool (Paisley et al, 2011). Understanding

staff views and experiences could help to identify some of the issues they encountered with the implementation of their tool.

Harvey and Holmes (2012) held focus groups involving clinical experts in a busy regional hospital in Australia to assess triage and the management of pregnant women in the ED. They recommend this method to collect relevant and reliable qualitative data and highlight problems, especially when the research involves clinical experts. Unfortunately it focuses on the nominal group technique used in the focus groups rather than the actual results of the research, which would have been useful for this study. Further evidence for the need to develop a standardised system is shown by McCarthy et al (2013). They applied the ATS to pregnant women presenting in emergency departments in Australia, rather than a specific triage system in obstetrics. They developed two condition specific algorithms for pre-eclampsia and antepartum haemorrhage and a triage education programme to see if it improved the assessment and documentation. They concluded that an education system and symptom specific algorithms related to pregnancy greatly improved documentation and assessment and may also reduce clinical risk for the women. They suggest further research into assessing whether the women have been allocated the correct triage score and recognise their algorithms have not been externally validated. However it only addressed two conditions so more algorithms need to be developed.

Paul et al (2013) concluded that women's satisfaction was improved and waiting times were reduced using a nurse-midwife-managed model in America and midwives have the necessary

skills to manage such a system. Since the Symptom specific Obstetric Triage System [SOTS] was implemented and the study commenced a 5 category Obstetric Triage Acuity System [OTAS] has been developed in Canada by Smithson et al (2013). Their study showed substantial inter-rater reliability overall, however they only randomly chose 8 nurses to assess it against. It had a variable effect on length of stay, but they claimed the system has established reliability and validity. Practice change requires constant reinforcement to experienced nurses who may otherwise rely on their own informal triaging assessments (Smithson et al (2013)). They did not examine why the staff were doing this instead of using the new system which may have provided some insight into their reasons. If they had sought their views and experiences of using the system in practice it may also shed some light as to why compliance plateaued at 90 %.

Maternity and paediatrics have been recognised as problematic to triage due to their very specific needs hence requiring a unique system. Few research articles exist on standardised systems in maternity triage and even fewer in the UK, so the literature, consists mainly of audit, service evaluation, editorials and discussions about triage systems.

In summary, several aspects have been shown to be vital for the success of triage in Maternity:-

1. Good clinical decisions are needed, therefore appropriate education and training is vital
2. A standardised system is required that is valid and reliable and specific to maternity conditions to reduce clinical risk for women
3. Good teamwork, skilled staff and communication is essential

4. More evidence is required of the implementation and use of triage systems in obstetrics; therefore there is a gap in the literature, particularly focusing on staff opinions on using the tool in practice.

The literature indicates the need for a standardised system in maternity, which has also been highlighted locally at the trust. A gap in the literature has also highlighted that the views and experiences of midwives in the introduction of a triage system have not been investigated extensively if at all but this is mainly as one does not exist in the UK. However it is stated in the literature that little evidence exists in triage services in maternity at all.

2.8 Change Management

In view of this an additional brief narrative review of the change management literature was undertaken (Popay et al, 2006). This was necessary because in the absence of definitive empirical work reporting the introduction of systematic triage systems in maternity care, some evidence concerning the main elements associated with the introduction of such a system was required. Identifying the barriers and drivers to implementing a new triage system into maternity care is critical to understanding the process. Cheater et al (2005) state barriers to implementation vary in different settings and at different times. The National Institute for Health and Care Excellence [NICE] (2007a) states that to develop a successful strategy for change, you need to understand the types of barriers faced in healthcare, which if carefully considered can be overcome with a tailored approach.

Drivers include the need for the new system, support from the chief executive, management and clinical staff, and the design of a training system for staff prior to the implementation of the SOTS. Richens et al (2004) recommend having a dedicated facilitator and project lead who works with individuals and teams in the practice context. Pronovost et al (2008) explain that changes which can improve patients' health are often difficult to get into practice, even when supported with good evidence. They suggest using the 4 Es approach, namely Engage, Educate, Execute and Evaluate, which is a useful model when applied to the implementation of the SOTS. Staff were engaged by involving the multidisciplinary team in the development of the SOTS, educating the rest of the team prior to its implementation and providing support during its implementation. It is now being evaluated. Clinicians 'buying into' the implementation of any new system is paramount in successful change (Jessup et al, 2010). The NHS Service, Delivery and Organisation (SDO) Programme (2004) concludes staff require a "readiness to change" and need to recognise that improvements to the current situation are needed.

'An important (arguably the central) message of recent high-quality management of change literature is that organisation-level change is not fixed or linear in nature but contains an important emergent element.' (Iles and Sutherland, 2001, p14). In order for an organisation to change it needs to be first understood and then transformed (French et al, 2005). The development of this new system was by staff at the trust and those at the university who have close links with the trust. Carnall (2007) explains that planning and implementing change is very challenging and careful diagnosis provides some access to the organisation's capability to change. Iles and Sutherland (2001, p79) state transformational change requires 'a major

shift in assumptions made by the organisation and its members'. Therefore getting the opinion of the staff who were using the system was paramount. Beer and Nohria (2000) combined hard (structures and systems) and soft (cultures and processes) approaches for successful change, using incentives and working with employees to empower them. Grol and Grimshaw (2003) state that to change practice you need to be prepared, involve the right people and have an evidence based proposal for change. West et al (2004) state that external demands create a need for the organisation to change and therefore requires innovation to meet that need.

These key findings from the change management literature informed the design of the study which is discussed in the next chapter:-

- Staff engagement, a readiness for change
- Clear leadership
- Education
- Listening to and acting on staff views
- Evaluation

3 METHODOLOGY

3.1 Introduction and Philosophical approach

The aim of this research study was to use a mixed method design to address the research question and to explore practitioners' views and experiences. An exploratory approach was used for the qualitative element of the study in order to explore the views and experiences of the midwives (Green, 1997). It was located broadly in the constructivist paradigm which is a way of understanding reality from the perspective of those experiencing the phenomena and their interactions, so the researcher can construct meaning along with the participants (Polit and Beck, 2006; Holloway and Wheeler, 2010). Focus groups were incorporated to ensure the culture, views and experiences of midwives working in the triage department with the new standardised system were examined (Spradley 1979). This was then validated using the quantitative element of the study which mixed methods facilitates, sending a questionnaire to all midwives who work in triage. An audit comparing women's notes from June 2012 to June 2013 was conducted as part of the main Symptom specific Obstetric Triage System (SOTS) study and the focus groups were used to clarify the findings from the audit. A protocol for the study was designed (see **Appendix 5**). The aim was to examine the barriers and facilitators to change in implementing this new system and assess if it has had an effect on the midwives as autonomous practitioners (Nursing and Midwifery Council, 2004) as the care they are giving in the new system was subject to a standardised approach.

3.2 Justification for Mixed Methods

A mixed method study design was intended to generate insights on different aspects of the experience and guide the next stage. Quantitative and qualitative research can be combined to triangulate and corroborate findings, so increasing validity. If done correctly triangulation can validate findings, however care is needed in dealing with data findings that do not agree with each other (Parahoo, 2006). Mixed methods research is suitable for evaluating a wider range of issues in health services because they can capture the complexity of health and health care interventions/environments (such as addressing a range of questions or a broader view on a complex disease, intervention or research environment) as you can answer more complex questions than quantitative research alone would allow, thus improving comprehensiveness and confidence in the findings (Greene, Caracelli, and Graham 1989; Bryman, 2006; O.Cathain, Murphy and Nicholl 2007). A sequential mixed methods design was used for this study (Andrew and Halcomb, 2009). Preliminary findings from the audit were discussed in the focus groups, and the focus group findings were used to develop the questionnaire, this was central to the design (Commonwealth of Learning, 2004). National Institute for Health Research [NIHR] (2006) state mixed methods should be used to bridge the divide between qualitative and quantitative research to investigate social phenomena in more depth. The intention is that the findings will indicate what best supports implementation; this information can then be used to inform future development within the Trust and implementation of the SOTS in other hospitals. Combining the methods and approaches needs to be justified to demonstrate the benefits (Parahoo, 2006). Multiple approaches can combine the strengths of each approach and offset their different weaknesses,

going beyond the limitations of one approach (Commonwealth of Learning, 2004; Tashakkori and Teddlie, 2003). Triangulation demonstrates rigour by drawing together the data from both forms of data collection, thus providing a complete picture of the phenomenon being investigated (Lacey and Luff, 2007). The focus groups allowed an examination of midwives views and experiences as little was known about this as demonstrated in the literature review. From this the questionnaire was developed, which then quantified how many midwives held views that agreed with the findings of the focus groups. Combining the two methods, which have different strengths and weaknesses, can confirm their results and improve the validity of both approaches (O’Cathain, Murphy and Nicholl, 2007).

3.3 Advantages and Disadvantages of Focus Groups

Focus groups can access data not reached by other methods of data collection as people use everyday communication to describe their cultural values, group norms, understanding and views, which can be used in various contexts to examine a range of topics (Robinson, 1999; Kitzinger, 2006). Focus groups are useful in investigating how people deal with things collectively: the team dynamic is an important factor in the use of this new triage system so it is useful to question the midwives as a team (Lewis, 2003). Focus groups are effective in generating rich in-depth data, engaging people in change and developing new ideas, although they can be difficult to organise and manage (National Institute for Health and Care Excellence [NICE], 2007a; Hancock et al, 2007). Focus groups can provide accurate data on specific issues within a social context, allowing participants to consider their own views in

relation to others and identifying cultural values and norms, thereby utilising the participants as researchers themselves (Robinson, 1999; Kitzinger, 2006). As this is a new triage system and the thoughts and views of midwives using this system are not yet known, focus groups are an appropriate way to research these views (Lewis, 2003).

Disadvantages of focus groups include bias caused by dominant members of the group, the results cannot be generalised to the whole population, conflicts can arise and they require considerable expertise to facilitate (Robinson, 1999, Holloway and Wheeler, 2010). NICE (2007a) state disadvantages of focus groups include needing a skilled facilitator, careful planning and analysis of data which can be time consuming. Krueger and Casey (2009) consider whether focus groups are scientifically valid and conclude that they are systematic and verifiable, providing understanding and insight without controlling the study, with the researcher remaining neutral. Ritchie, Spencer and O'Connor (2003) also agree that qualitative research provides rich data but it is vast so the analytical skills of the researcher are vital. Clearly describing the research design and how the data is analysed adds to the credibility and transferability of the research (Johnson and Waterfield, 2004).

3.3.1 Method of the focus groups

In order for research findings to be used in different areas of practice, the methods, procedures and audience need to be considered if the results are to be applicable to the workplace (Kruger and Casey, 2009). Denscombe (2010) states all studies require consistency and reliability. Prior to the study approval was gained from the University Ethics Committee (**ERN_13-0695**) and Research and Development permission was granted from the Trust in which the study was taking place, to comply with Research Governance

Regulations (Department of Health [DH], 2005) (**Appendix 6**). The acute trust also agreed to be the sponsor for the study (**Appendix 7**). The focus groups were carefully planned to achieve the highest attendance possible by holding them at shift handover, in a room accessible for all and in an informal environment (Robinson, 1999). A topic guide (**Appendix 8**) was designed as a framework to keep the sessions focused, but they were lead by the midwives discussion. The preliminary audit findings (such as documentation not being completed and time frames not met), experience and review of the literature informed the development of these questions but in practice the focus group discussions were lead by the midwives and very few of the questions used. No personally identifiable information was collected: any recordings taken were anonymous, along with all data extracts that are reported here. The focus groups were digitally recorded and field notes on the nature of the discussion and general atmosphere were made (Kitzinger, 1995). The field notes were process driven purely serving as a reminder for the researcher and so did not constitute part of the data analysis. Following each session the facilitator and co-facilitator met with an experienced researcher and senior lecturer at the university and co-developer of the SOTS system to debrief.

3.3.2 Recruitment, consent and ethical considerations

Attendees for the focus groups were recruited using posters inviting midwives who work in triage to take part. A copy of the poster was also sent with an email to all the Core Band 6 and 7 midwives by the managers on Delivery Suite asking the midwives to contact the researcher if they were interested in attending a focus group. A reminder was also sent after

one week. Participant Information leaflets (**Appendix 9**) were given to those who contacted the researcher directly and were widely available in the Triage Department. Data was anonymous and unidentifiable and written informed consent (**Appendix 10**) was gained prior to commencing discussion on the day (Streubert and Carpenter, 1999). Confidentiality and the right to withdraw was made explicit during the process (Robinson,1999). Inclusion criteria were: midwives who work in the Triage Department at the acute trust (n= approximately 95); midwives of varying ages; varying years of experience; professional, mainly degree based registered midwives. Excluded were midwives who do not work in Triage. The researcher is also a midwife who works at the trust so the participants were colleagues. However as a full time student at the University and researcher, personal information of the participants was only accessed if they contacted the researcher and agreed to its use. Participants could withdraw from the study at any point up until two weeks after the focus groups were held, with no risks to themselves or employment at the Trust. However due to the interdependent nature of the data in the focus groups their data could still be used up to the point of withdrawal but no direct quotes would be used in reports or publications.

3.3.3 Data Analysis

Thematic analysis was used to interpret the data from the focus groups; this involved examining the themes that emerged from the data and the relationship between them, to generate new concepts and theories in this area (Lacey and Luff, 2007). Grbich (1999, p.80) states “The main aim of qualitative research is to gather rich information” this can however lead to problems in the analysis process. The first stage begins during field work and then

develops during analysis of recurrent and important themes (Robinson, 1999). The data from the focus groups was transcribed verbatim by a transcription service. Once the recordings were transcribed the researcher then checked them for accuracy against the original recordings. The data was then coded for developing themes using the Nvivo data management software package (**Appendix 11**). Constant comparison of the themes was undertaken and the relationships between them identified (Lacey and Luff, 2007) (**Appendix 12**). Qualitative research if done properly is systematic and rigorous which also means it is labour intensive and time consuming (Pope, Ziebland and Mays, 2006). Parahoo (2006) explains that an inductive and iterative approach to break down and reassemble data is useful when little is known about a subject, or to develop concepts. Focus groups and interviews can provide rich data but this causes problems with analysis as it is difficult to analyse the large amount of data (Kitzinger, 1995; Ritchie et al, 2003). The findings from the focus groups were then used to inform and design the questionnaire. The themes were linked to the questions which focused on exploring whether the introduction of SOTS was well managed, if SOTS is useful in assessing clinical urgency, the use of clinical judgment, managing and organizing the department and workload, and the pain score and documentation.

3.4 Questionnaires Advantages and Disadvantages

Questionnaires can vary in size, purpose and appearance, but require good question design. Questions can be open or closed or a combination of both, to collect data for analysis, by asking the relevant people directly (Denscombe, 2010). Questionnaires are useful for accessing a large number of participants to determine how many agree or disagree with a particular idea or opinion and focus groups explore how these ideas or opinions are formed

(Kitzinger, 2006). Hence the reason for the focus groups was to explore what the ideas and opinions were and then to develop the questionnaire to investigate how many midwives agreed with them. Using the midwives' views to inform the questionnaire improves the validity of the questionnaire and tests out the themes from the focus groups on the wider population. Advantages include being economical, relatively easy to arrange, standardised and provide pre-coded answers, and collect a lot of data quickly (Jones and Rattray, 2010). Having structured, predetermined questions also adds to the reliability, allowing for comparison of answers between respondents (Parahoo, 2006).

Disadvantages include poor response rates. This could be due to participants finding pre-coded questions frustrating and restrictive. Also pre-coded questions can bias the findings to fit the researcher's rather than the participants' views and there is little opportunity for the researcher to check for truthfulness of the answers given (Denscombe, 2010). Questionnaires only tell you how many people agree or disagree about a subject without context (Parahoo, 2006). However, the focus groups provided some context. Low response rates can also be a major problem: the questionnaire was made as short as possible, comprehensive and self-administered so the midwives could complete it in their own time and reminders were sent to improve response rates (Parahoo, 2006).

3.4.1 Midwives Questionnaire Method

The Questionnaire (**Appendix 13**) was sent to the University Ethics Committee for approval and the R&D department at the Trust for the purpose of Research Governance. The researcher was assisted in the development of the questionnaire by supervisors at the

university and it was checked by the facilitator from the focus groups. In addition basic demographic information of the midwives' age, Band, number of years qualified as a midwife and approximate number of times they work in triage in a month was collected. How the questions are asked and in what order can affect the answers given (Rebar et al, 2011). Due to time pressures and limited resources a limited pilot study and 'sense check' was carried out, by sending the questionnaire to some of the development group and an experienced midwife researcher for comments, to help prepare for the study and test for any problems (Polit and Beck, 2006). Jones and Rattray (2010) state a pilot study can influence the quality of data and response rate. Given more time a full pilot study would have been conducted.

3.4.2 Recruitment, consent and ethical considerations

The short questionnaire was sent to every core Band 6 and 7 midwife (n= 95 midwives) who work in Triage via an email from the delivery suite manager during October/November. A reminder was also sent after one week with the questionnaire attached. Paper copies were also available in triage for any midwives who work there to complete in a 2 week period. A poster to encourage completion was also displayed in Triage and Delivery suite. They were asked to leave the completed copy in a post box in Triage or on Delivery Suite for collection by the researcher. Consent was implied by completion and return of the questionnaire and they were anonymous. All possible applicants were informed that non-completion would not result in any detriment to them. All midwives who work in triage were included; midwives who did not work in triage were excluded.

3.4.3 Data Analysis

In this study closed questions were used to confirm findings from the focus groups and sent to all midwives who work in triage. There was also some limited space for free text which was organised into themes using simple content analysis (Polit and Beck, 2006). The responses to structured closed questions developed from the focus groups and included in the questionnaires were entered into a database and analysed using descriptive statistics.

3.5 Conclusion and the usefulness of mixed methods

Kitzinger (1995) states focus groups are ideal for collecting data on how knowledge and ideas develop, whereas questionnaires reveal how many people hold an opinion. Focus groups and questionnaires were used to access a wider range of data and to check findings against each other providing a richer picture (O’Cathain and Thomas, 2006). Validity is shown when the best methods are used and description of the research process is given in detail (Whitmore et al, 2001; Popay et al, 1998). Combining qualitative and quantitative data made the questionnaires more relevant as the questions were developed from the participants themselves, and confirmed the findings of the small focus groups with a wider population of midwives.

4 RESULTS/ANALYSIS

4.1 Focus groups

Focus group (FG) 1 consisted of only three midwives, because staff shortages and high work load, resulted in poor attendance. FG 2 had a higher attendance of eight midwives who regularly worked in triage. FG 3 was arranged to confirm data saturation, to check that no new themes were emerging, but again lack of staff and high workload meant only one midwife could attend. Therefore an informal interview was held with her to explore her views and experiences of the Symptom specific Obstetric System (SOTS): although no direct quotes will be used, her views and experiences confirmed the themes that had developed from the focus groups and no new themes emerged. See **Table 4.1** for a description of the focus group participants' characteristics. Through thematic analysis of the data the following themes were identified:- Patient safety, Categories and time frames, Philosophy of care, Clinical judgment, Management of the department, Pain score, Documentation, Communication, Midwives' skills and experiences.

Table 4.1-Characteristics of focus groups participants

Midwife	Age	Band	Years of experience	Highest Qualifications
Focus Group 1				
Mw 1	50+	6	15+	Diploma
Mw 2	50+	7	15+	Graduate Diploma
Mw 3	20-29	6	6-10	Degree
Focus Group 2				
Mw 4	40-49	6	11-15	RM
Mw 5	40-49	7	15+	Graduate Diploma
Mw 6	40-49	7	15+	Degree
Mw 7	30-39	6	6-10	Degree
Mw 8	30-39	7	6-10	Degree
Mw 9	40-49	7	11-15	Graduate Diploma
Mw 10	20-29	6	1-5	Degree
Mw 11	40-49	6	6-10	Degree
Focus Group 3				
Mw 12	30-39	7	11-15	Degree

Thematic analysis was used in the qualitative analysis of the data from the FGs to describe and organise the data, to aid interpretation (Braun and Clarke, 2006). The data was organised into themes to clarify the substantive phenomena (Silverman, 2011). The transcripts were first checked for accuracy by listening to the audio files and correcting any mistakes. This helped to begin immersion in the data in addition to attending the actual focus groups themselves. Initial open coding was done line by line on the NVIVO data management software programme. From these initial codes, codes were then grouped and themes were developed where groups of codes confirmed consistent themes in the data. As the researcher was inexperienced and coding alone confirmation of the findings was sought. Codes and

themes were validated with the researcher's supervisors and the themes discussed with the experienced facilitator of the focus groups.

4.1.1 Patient safety

A number of midwives talked about the system reducing their stress because it made it easier to manage the work load and assess clinical need more rapidly. The initial assessment gave the midwife reassurance because they felt in more control of their work, in contrast to the situation before its introduction.

Obviously the workload is increasing. That's why I'm concerned. And it really worries me when there are delays seeing the lady. (FG 1, Mw 1)

And you know if you are putting people in the waiting room to wait that they are okay to wait. (FG 2, Mw 5)

The initial triage is much, much better: before there were women waiting for five hours and you'd never set eyes on them, you didn't know what was happening to them or their baby. (FG 2, Mw 6)

4.1.2 Categories and time frames

With regard to changing the category, generally most midwives were confident to 'up triage' due to concerns about patient safety and litigation. However, in terms of the pain score midwives were confident to 'down triage' women because they felt the women reported higher pain scores than clinically indicated resulting in them being placed in a higher category. Up triaging means to categorise a woman in a category higher than clinically indicated and down triage means to put them in a lower category than clinically indicated. The midwives felt justified in assigning women to a higher category if there were concerns,

and down grading them if things became more stable. However in both situations they felt they could use their clinical judgment to change their category.

I feel you can use your clinical judgment though, because if that woman is an orange because her observations were abnormal, and you do them again and they're normal, you can use your clinical judgment and downgrade her. (FG 2, Mw 8)

Time frames were seen as useful for some as they gave a reason for requesting a doctor's review more urgently and to ask for help if the work load required it. However, there was also some discussion about them being unrealistic, as workload prevented achievement of these time frames on occasion. Some felt that Triage was not women centred, as often the woman wanted to tell her story and share her problems, but they needed to be quickly assessed and discharged or transferred to the most appropriate place.

4.1.3 Philosophy of Care

Midwives traditionally provide holistic care on a one-to-one basis for the woman for the whole care episode. They reported that this is taught in midwifery training and deeply embedded in the professional culture. Priority care used in triage is in tension with individualised care for some midwives, as they want to provide the whole care episode for the woman, rather than make a quick initial assessment and then pass her care on to another midwife to continue the assessment at a later time. For this reason some midwives struggled with the new system as they wanted to do the full assessment, which then delays treatment for women who may need to be assessed more urgently. The tension with the new system

came not from the fact that the care was being standardised, but that midwives had been trained to give continuous holistic care.

And I think as midwives we're always taught to provide holistic care, and a very rounded care, so you're now going right, I need to see you, listen to your baby's heart and out again. (FG 1, Mw 3)

Yeah you want to do everything, everybody wants to do everything. (FG 2, Mw 6)

Some felt there was an unfair balance of roles and workload between the initial assessment midwife and the assessment midwife: often it was the band 7 who conducted the initial assessment and the band 6 who did the follow up assessment and there was a reluctance to swap, although some shared the roles and workload more evenly.

I think part of that, though, wanting to stick with the old way is that they feel the two roles are quite unequal, I think the triage role is a lot easier, a lot less stressful than the other one. (FG 2, Mw 7)

4.1.4 Clinical Judgment

A number of midwives discussed the specific symptoms the women were attending with if known (i.e from the telephone call) to decide who needed to be seen first, before the formal initial triage assessment even began. As part of this informal assessment process the telephone conversation and the midwife's assessment of the woman using non-verbal signs, 'instinct' and 'gut feelings' were influential. However, answers were also obtained from the standard sentence most midwives ask when the woman is brought in 'So what has brought you in today?' This interaction, which was discussed by a number of the midwives, is significant as it means that the initial triage assessment and symptom specific triage

assessment cards could be combined as suggested by some of the staff. There is also some concern about the paperwork for the two different assessments getting separated, thereby fragmenting the documentation, but combination of the assessments booklets could help to streamline the triage process.

I didn't even have her notes, it was just me looking at her, instinct. Hand on her abdomen, get her round. So it doesn't matter how-we do need a tool, obviously, but you must allow for clinical judgment. (FG 1, Mw 2)

Most midwives felt the system allowed them to use their clinical judgment, which was fundamental to their role as a midwife. They use it to assess pain and clinical urgency (they sometimes felt they knew by intuition that a woman and/or her baby had a problem). They also used it when rechecking observations: if they felt the woman was well and the observations were normal they were less likely to recheck the observations. Workload, however, was also a factor in this as it was very time-consuming getting women in and out of rooms to recheck observations, especially if the observations were normal in the first place.

I think we all use our clinical judgment though, because I mean the paperwork is a framework isn't it, but you still make your own judgments. (FG 2, Mw 11)

Clinical judgment was discussed at great length in the focus groups with the experienced staff feeling they were still able to use it. However, they felt less experienced staff may not find this so easy because of the nature of the standardised care, time frames for review and repeat observations. They felt because it was written it made the system rigid and restrictive but was easier to defend if something went wrong in practice than if you went against what was written down and used your clinical judgment.

4.1.5 Management of the department

The response from most of the midwives was that the new system was an improvement in terms of managing the department and workload than the previous situation when there was no system. Some of the midwives felt people were reluctant to change, for example some are still doing 'their own thing', using the old way especially when it is quiet, with one midwife doing the whole assessment for each woman one at a time. Most midwives wanted to change the way they work, were enthusiastic about the new system and keen to solve the initial problems.

The new system has helped in that women who need to be seen sooner tend to get seen sooner, on the whole. That's the major way I can see it's changed. (FG 2,Mw 4)

It was also stated that the system helped to standardise the care which meant they could better manage the workload and the department. They believed the tool is good but some midwives were better at using it than others.

The tool is only as good as the people who are using it (FG 2, Mw 6).

I think it has helped, because when I came in on Sunday there were I think 13 women on the board.... And me and the midwife we just didn't know what was going on, what was happening, so we had to look through all the notes and allocate them and once we knew what was going on there we could continue... (FG 2, Mw 8)

4.1.6 Pain score

The pain score was discussed by many midwives as being a problem, often leading to what the midwives felt was an unrealistically high pain score resulting in the up-triaging of the women into a higher category.

..with the pain score, I find that it ends up higher, I had an argument with a woman who was saying she'd got a pain score of ten and was sitting there laughing and I said well, your pain score is not 10... (FG 2, Mw 4)

There were a number of accounts of women walking into triage, talking on the phone, laughing and joking, and then giving themselves a pain score of 8 when the midwives rated the pain much lower. This was dealt with in a number of ways some negotiated with the woman to produce what the midwife felt was a more realistic score, some wrote the woman's score down but documented the reasons she felt it was not accurate. Alternatively, they would put her in a lower category and either document why or omit the pain score altogether. Therefore the pain score had an impact on the staff's confidence in the system as they felt it was the only reason for placing a woman in a higher category.

But I've even tried to change the wording of it, like 0 is no pain and 10 is you're about to die, and they say oh yeah, about a 9. {laughs} (FG 2, Mw 7)

If she says she's a 9 and then she's on her mobile, we've all had that sort of thing, I write that her pain score is 9, but she's chatting on her mobile phone and therefore I've put her as a yellow. And I think that's easily justifiable. (FG 2, Mw 6)

This meant the midwives felt the women were ‘up-triaged’ and placed in the orange category, thus becoming like ‘crying wolf’ as the women ‘were not really orange’. They felt doctors responded quicker in the beginning when they were told the woman was an orange category, but the response time lengthened as they began to realise it was only due to the pain score that the women were in a higher category. However, the midwives did not believe this lead to ‘real orange’ women not being reviewed in a timely way as the midwife would continue to ask for review from the doctor until they got a response if they were concerned.

Orange has become a bit the ‘boy who cried wolf’ I think and we’ve cried wolf with women that aren’t necessarily really, really orange. (FG 2, Mw 8)

The midwives felt the women exaggerated their pain score to justify their admission or because they were frightened and that once they had been assessed and reassured their perceived pain score may be reduced.

I feel a lot of it as well though is if the women feel that they need to justify why they’re there, we can see that they’re not at that pain score but they think if they say 2 or 1 we’re going to say what are you doing here? (FG 2, Mw 5)

4.1.7 Documentation

Most midwives felt the documentation was repetitive and time consuming to complete, however some felt it was very useful to standardise practice and manage each woman’s care.

For people new to the triage area, bearing in mind we’re quite a nomadic workforce, so we get people from the wards, from the community, from other places, coming in and using that paperwork, it does keep them focused. (FG 1, Mw 3)

Combining the booklets to reduce repetition was suggested by a number of midwives.

I think the problem is that it is quite wordy, there's lots of repetitiveness with signing your name, printing your name, different dates, ... you could just combine the 2 booklets. (FG 1, Mw 2)

4.1.8 Communication

Handover was highlighted as an area that required improvement as currently there did not appear to be a set way to do it and some managed it better than others.

And you'll end up getting handover of some woman from one midwife and handover of other woman from another, but that shouldn't happen. (FG 2, Mw 8)

Effective communication is essential for the safety and care of women: this system enables you to describe your work load and ask for reviews from the doctors and transfer unwell women to delivery suite quickly. However, there were times when this was still not happening promptly as doctors were busy on delivery suite and there was no room or midwife on delivery suite for transfer.

4.1.9 Midwives' skills, experience and training

The need for experienced, skilled staff in triage was referred to. It is an extremely busy department and requires efficiency and skill to see women in a timely and safe way, so these are imperative to the success of the system. Some felt that the system itself also helps to provide a standard care pathway for each woman, therefore making it easier for staff without skills and training to work in triage.

Particularly when you're working very fast in a very active, fluid movement in triage...(you need experience). (FG 1, Mw 2)

A number of midwives suggested providing training for rotational staff and band 5 midwives because although they do not routinely work in triage they can when needed. Also, this was often when the workload was high, making it a difficult environment in which to teach them about the new system. Others such as those in the birth centre, Antenatal clinic, community and general practice also needed training in appropriate referrals and assessment to reduce the number of inappropriate referrals to triage from other health care professionals.

When we did the training for the system, brilliant, it's going to work fantastic, and we were really looking forward to the introduction of it... (FG 1, Mw 3)

A range of barriers were identified that existed prior to the introduction of SOTS and are therefore are not pertinent to the study as the system would not change them and was never intended to do so. However midwives felt they did have a bearing on the use of the system in practice and so their views require careful consideration in the future by the trust. These included 'bed blocking', lack of doctors, the telephone advice service, lack of staff and resources and inappropriate referrals. Regularly having to answer the telephone to deal with queries and give advice was discussed by a number of midwives as it is essential to assessing and advising the women but impacts on managing the workload in the department.

If you don't answer the phone, what happens is people just go well I'll just turn up then and then you run into all manner of problems. (FG 2, Mw 10)

Inappropriate referrals, both from other departments within the hospital and from G.Ps and community midwives, were a big problem as they affect the workload. Triage is the gateway to the hospital and the other health care professionals and women know they will be seen.

(Triage is the)First access point to raise concern really. So if you've got a concern, it's one of the first access points for women and health care professionals. (FG 2, Mw 9)

The themes that developed from the focus groups and that were incorporated into the questionnaires to explore the findings further were:-

- Patient safety and clinical urgency, using categories and time frames (The culture of midwifery is in tension with this, as they want to provide all the care for that woman's care episode straight away). Safer to initially assess the woman and then get them back for further assessment rather than the old way of one midwife doing the whole assessment and then moving on to the next woman no matter what the problem is.
- Clinical Judgment (utilising midwives' skills and experience, imperative for system to be effective)
- Management of the department-describing the workload, can escalate and request the Doctor to review as soon as possible. The department is more organised and efficient
- Management of change (including training)-there is a period of adjustment to the new system, some initially enthusiastic the (champions of change), encouraging others to join in, but others are reluctant to change.
- Confidence in the system (pain score, barriers and facilitators to the system). Able to sit the woman back in the waiting room having reassured her that she and her baby are all well at that time. Felt more in control
- Pain score is negotiated between the woman and the midwife and needs to be adapted to include other factors such as facial expressions and movements. It was not liked by some staff and seen as a barrier to implementation.
- Informal initial assessment could facilitate the combination of the paperwork to reduce repetition and streamline the documentation
- Inappropriate referrals could be reduced by providing information and training to other health care professionals and the women themselves.

4.2 Questionnaires

The Questionnaire was completed by 53 of 79 midwives (67%) during a two week period from 28th October to 10th November 2013 (**Appendix 13**). The potential number of midwives that could be included was 95 but maternity leave, long term sickness and annual leave meant 16 could not respond. The data was then entered into a bespoke database by a data entry clerk and descriptive statistics compiled.

4.2.1 Results

Most of the items were closed questions and the participants were asked to indicate their response on a Likert scale or in a tick box. However some questions invited participants to add additional comments. The themes of these responses will be discussed, with reference to the results from the questionnaire. All of the midwives worked at least 1-2 times a month or more in triage and 38 of them had attended SOTS training. See **Table 4.2** for characteristics of the respondents.

Table 4.2-Characteristics of questionnaire respondents

Number of Responses		Number of Responses	
Age Group		Highest Qualifications	
20-25 years	13	Diploma	5
30-39 Years	15	Degree	33
40-49 Years	15	Graduate Diploma	0
>50 Years	9	Masters/PhD	2
Missing	1	Registered Midwife	11
		Missing	2
Years Qualified as a Midwife		Band	
<1 Years	2	Band 5	5
1-5 Years	11	Band 6	27
6-10 Years	16	Band 7	19
11-15 Years	6	Other	1
>15 Years	17	Missing	1
Missing	1		

4.2.2 Patient Safety

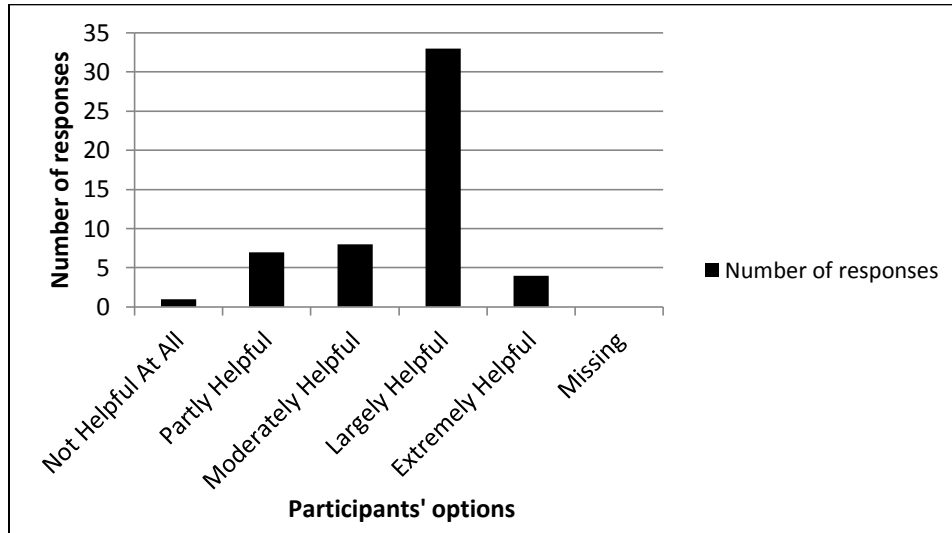
Most participants (36/53 midwives), when given the option to agree or disagree, felt it was safer to divide the care into immediate clinical assessment and then further care and investigations by different midwives, rather than the previous approach when care was provided by one midwife in Triage. Their comments indicated they believed the initial assessment meant women were seen quicker, although some midwives felt it fragmented the care and did not give the same continuity of care.

It means women are seen quicker for initial assessment, however it's a lot of work for the midwife giving further care. (Free text from questionnaire, [FTQ])

Some midwives insisted on continuing to deliver the whole care episode to maintain that continuity of care. Some midwives felt care provided by one midwife was preferable (11/53) and did not agree that it was safer to separate the assessments (6 did not respond). However, it was highlighted in their comments that everyone should be seen and triaged straight away rather than waiting in turn as was done previously when one midwife did the whole assessment for each woman.

I think it is very important that women are seen after arrival and allocated a category, so seen appropriately whether care is continued by one midwife or divided. (FTQ)

Figure 4.1-Assessing clinical urgency accurately



Most (33/53) midwives found the new SOTS system largely helpful in assessing clinical urgency accurately in women who attended triage (Fig.4.1). In their comments midwives felt women were being seen sooner than previously because of the new initial assessment, even if there were still some delays in the subsequent assessment, particularly by the Doctors.

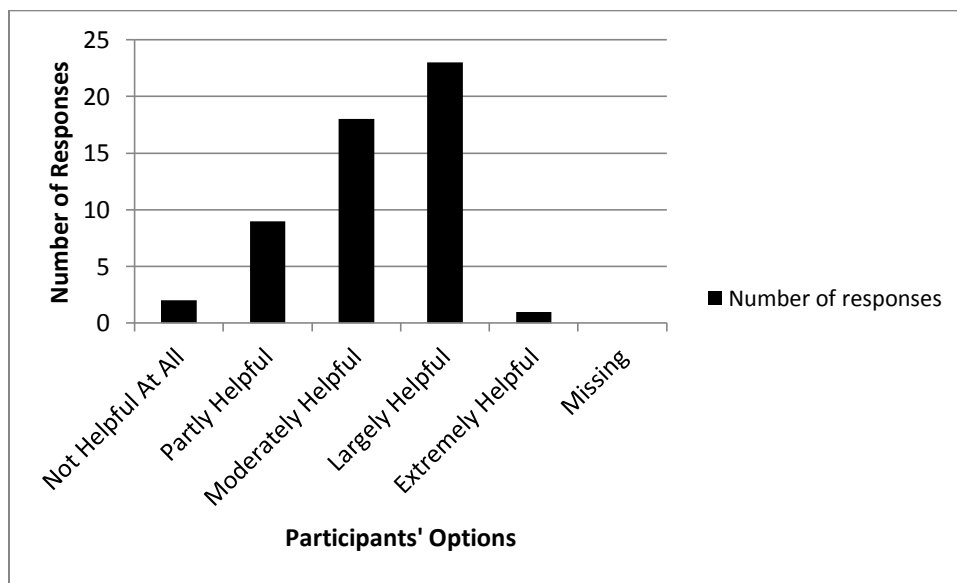
Everyone should be seen and triaged straight away, rather than waiting in turn .
(FTQ)

Because of these points (staffing, workload, lack of skilled staff, giving telephone advice), very often it is not a good place to work and is very stressful. (FTQ)

The Midwives stated that the environment was often challenging, especially at times when work-load was high, when more rooms would be beneficial. Triage is generally seen as an extremely busy and stressful place to work. For these reasons it was difficult to meet the time

frames, especially when repeating observations and seeking a Doctor's review. However, on the Likert scales most midwives felt the use of time frames and categories were largely (23/53) or moderately (18/53) helpful in the new system (Fig.4.2), providing them with some 'power' when asking for a Doctor to review and helping to manage the workload.

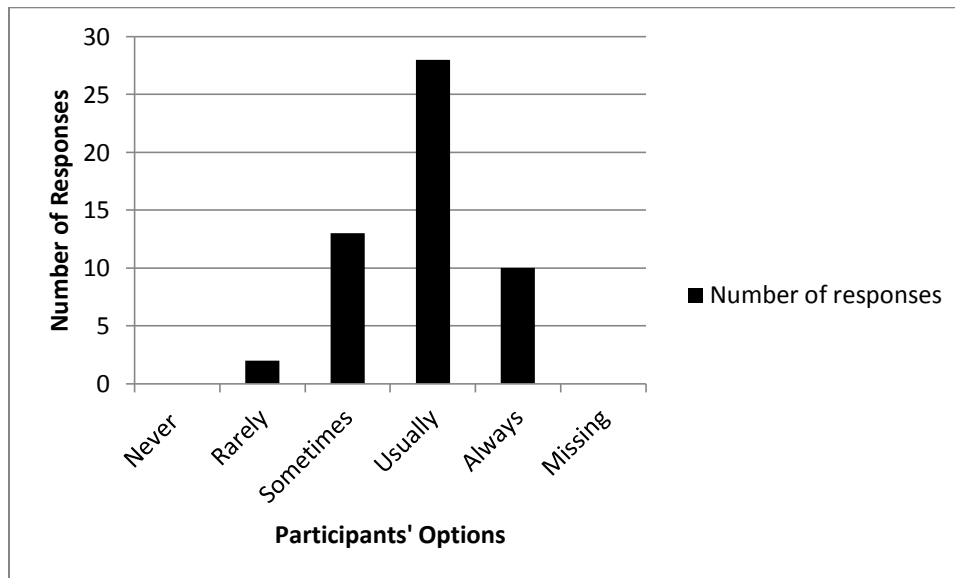
Figure 4.2-The usefulness of categories and time frames



4.2.3 Clinical Judgment

Most midwives (28/53) felt they could usually use their clinical judgment with the new SOTS system (Fig.4.3). 13/53 midwives felt they could sometimes use their clinical judgment whereas 10/53 said they could always use it. None of them said it never allowed them to use their clinical judgment and only 2 felt they could rarely use it, therefore confirming the findings from the focus groups.

Figure 4.3- Ability to use clinical judgment

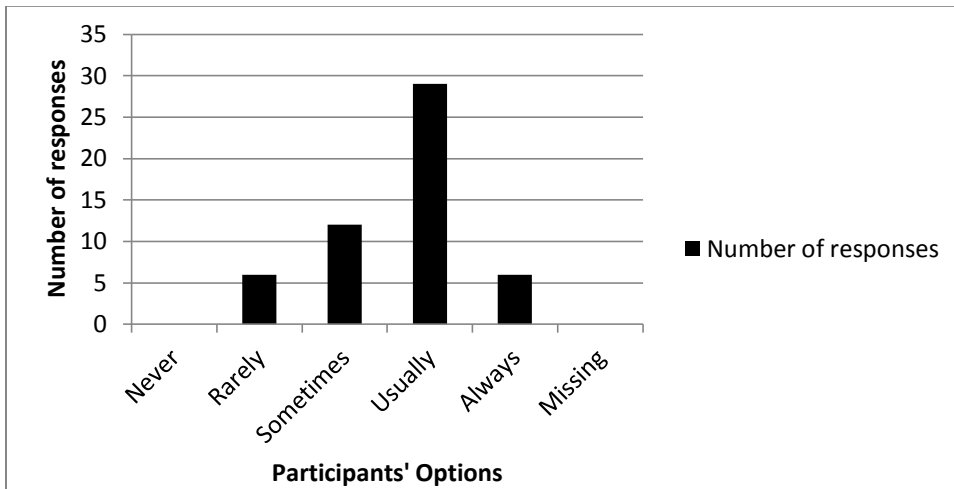


4.2.4 Management of the Department

Most of the midwives found the new system usually (29/53) or mostly (12/53) enabled them to accurately describe the workload in triage (a total of 77%) (Fig.4.4) and this was useful in the day to day management of the department. In the comments section it was noted most midwives felt it depended on which midwives were in triage as to how well the system worked, as some were still 'doing their own thing'. Instances where the new system was not correctly or consistently used, caused confusion and disorganisation in the department.

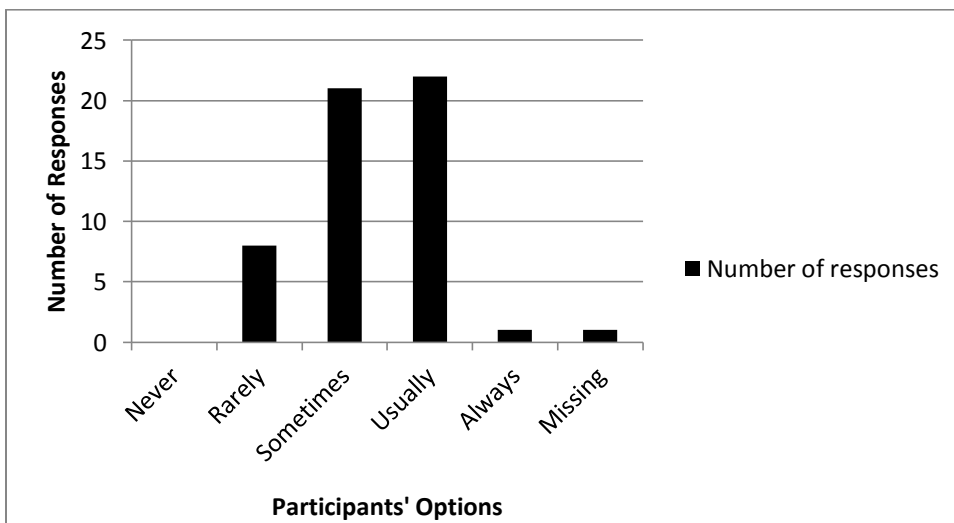
There are some staff not complying with the system, causing disorganisation, shift leaders are wanting labourers assessed in triage first rather than going straight to delivery suite. (FTQ)

Figure 4.4-The SOTS accurately describes the workload in Triage



The Likert scale responses showed that most midwives felt that SOTS sometimes (21/53) or usually (22/53) enabled them to obtain medical assistance more appropriately (Fig.4.5). There continues to be a problem in the wait for Doctors as they also cover delivery suite. Therefore, if there are emergencies on delivery suite it means there will be a delay in the woman in triage being reviewed, particularly if input from a more senior Doctor is required. However, this problem existed before the introduction of the SOTS system.

Figure 4.5 –Able to obtain Medical Assistance



The Likert scale responses show that the majority of midwives found that they usually (28/53), or sometimes (13/53) felt in control of the workload in triage (Fig.4.6). Most midwives felt the department was sometimes (27/53) or usually (19/53) more organised and efficient (a total of 86 %) (Fig.4.7). This data demonstrates the need for improvements in the system so more midwives feel more in control of the workload and the department is more organised and efficient. This perhaps reflects what was discussed in the focus groups, i.e. that some midwives were reluctant to change and were not using the new system, as well as the need for further training, evaluation and changes to the system.

Figure 4.6- Able to control the workload

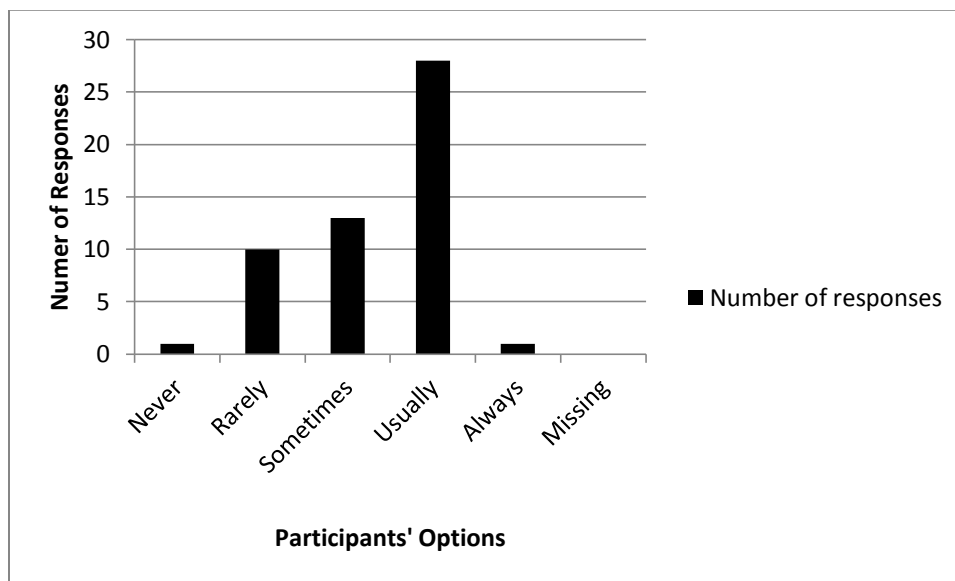
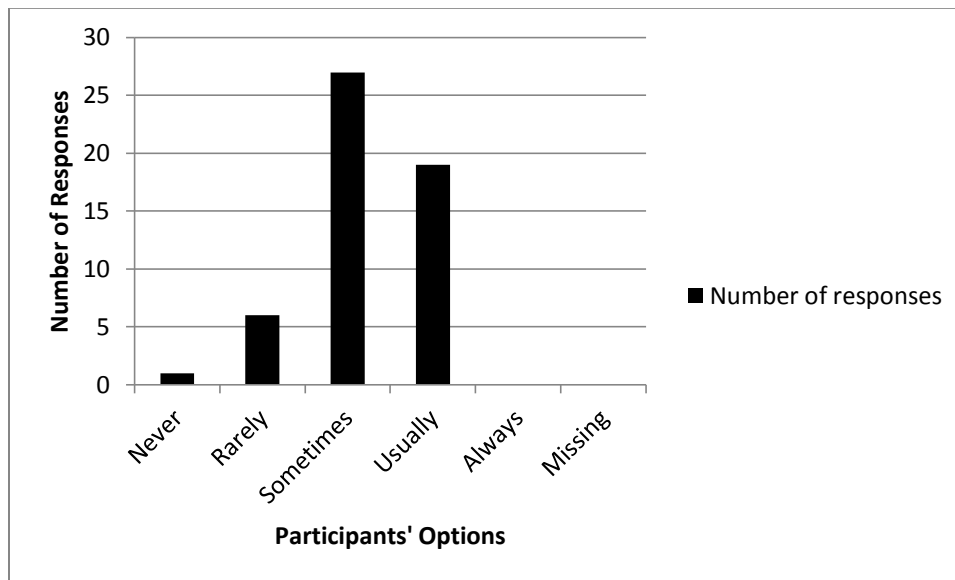


Figure 4.7-Department more organised and efficient



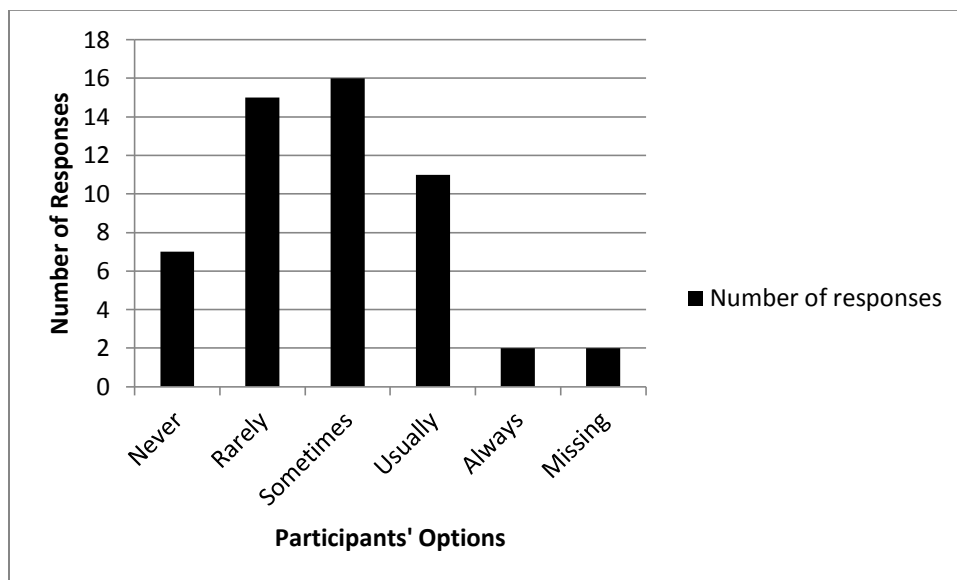
4.2.5 Pain Score

The midwives stated in their comments that they were able to give a more realistic pain score for the woman based on her movements, facial expressions and their own clinical judgment, or at least it should be a joint score agreed between the woman and the midwife, with some suggesting the removal of the pain score altogether. 43/53 midwives selected yes when asked if the pain score should include additional elements such as movement and facial expression. The majority of midwives indicated on the Likert scale for this item that the pain score was sometimes (16/53) or usually (11/53) agreed between the women and the midwife (fig 4.8), although the system states it is based solely on the woman's perception of pain. Although 15 midwives rarely and 7 midwives never felt it was agree between the women and the midwife, which from the focus groups suggests this is because the midwife decides the pain score not the woman herself as the system intended. In the comments one midwife stated women have no real understanding of the pain score and give a much higher score,

even when it is explained they would not be able to talk and laugh or move easily with a high pain score. Some stated it was irrelevant due to different pain thresholds and also different conditions. They also felt it gave them a more urgent category than was warranted.

Pain score differs greatly between midwife and patient, e.g. patient on phone smiling but say pain score 8 making them an orange! (FTQ)

Figure 4.8-The final pain score is agreed between the woman and the midwife



4.2.6 Documentation

Most midwives (48/53) ticked yes when asked if combining the initial assessment and symptom specific triage assessment card would be helpful. In their comments they felt the paperwork was repetitive and involved a lot of duplication of information, and combining the documents would reduce this.

Too many repetitions on different assessment papers and more chance of paper getting lost. If combined into one booklet, care would be more seamless. (FTQ)

Only 3 midwives felt it would not be helpful (2 did not answer): one stated this was due to the fact that they felt there was a need to complete the initial assessment before deciding on the symptom specific triage assessment card. However, asking the woman what she has come in with on arrival can address this, as discussed in the focus groups.

4.2.7 Inappropriate referrals and training

There was general consensus from the midwives, shown by use of optional tick boxes, that further information needs to be developed regarding the SOTS system and sent to GPs, community midwives and the women themselves.

Women should expect triage to be like A&E (i.e. made aware there can be a significant wait). Community midwives and G.Ps refer too many women who do not need to be referred but will not listen to advice from the triage midwife. (FTQ)

The comments indicate the midwives felt the training was well explained and used good practice-based scenarios, but it needed to be rolled out to all midwives and those who missed it initially. Some midwives felt triage was not the ideal place to provide on-site training as the department could be very busy so not an ideal teaching environment, however, one midwife was trained on site and found it easy to follow.

Training was appropriate, but not everybody trained prior to its implementation and triage too busy to be teaching system to junior midwives (FTQ)

It was also stated in the comments that midwives felt some initial problems existed in the implementation of the SOTS but were addressed and dealt with well by the team.

There were some issues to begin with but this is to be expected and all of the midwives' comments have been acted upon. (FTQ)

A number of midwives stated in their comments that good communication, organisation, skill mix and team work were required for the system to work well in practice.

I feel it isn't the system, but the personnel that make the difference. Even with the paperwork people are not triaged in the timeframe due to poor people organisational skills. (FTQ)

Handover was identified as a difficult process, especially at times of high work load when good communication is crucial to transfer the care clearly. For further free text examples from the midwives' questionnaires see **Appendix 14**. Forty (75 %) of these midwives felt the introduction of the new system was well managed. Having presented the results the implications of these findings will now be discussed.

5 DISCUSSION

Most midwives reported overall satisfaction with the implementation and use in practice of the Symptom specific Obstetric System (SOTS) in both the focus groups and questionnaires. Previously no comparable system existed in the department, so staff had to adapt to this concept. Midwives felt the overall management of the change was successful: factors that assisted this were initial involvement of some clinicians in the development of the tool, and training and support during initial implementation. Some problems when implementing a new system in practice are unavoidable. In the implementation of the SOTS, problems such as minor changes to the paperwork and logistics of where paperwork was kept were recognised and changed quickly which was seen as positive by the midwives. The findings from the focus groups and questionnaires highlighted subjects that require further discussion and may have an impact on the local organisation and maternity services as a whole. These include facilitators of change such as patient safety, the ability to use clinical judgment, management of the department and training. Barriers to change included the workload, pain score, documentation, lack of staff, availability of doctors, 'bed blocking' and the telephone advice service and these have broader organisational implications. This standardised care system may impact on maternity services nationally if widely implemented, as it would provide a standardised system for all trusts. SOTS may also have a positive impact on the safety of the women and their babies and on the organisation of the department but this requires further research.

5.1 Standardised care and patient safety

The midwives recognised the importance of patient safety for both the woman and baby as a priority in triage. Improvement of quality and safety are required for women along with better access to services (Department of Health [DH], 2007). The SOTS may improve the overall safety and quality of the service for women as it helps some midwives in the management of the department and improves the assessment of clinical urgency as the midwives suggested. Further research, however, is needed to confirm this, though some aspects have been evaluated as part of the main SOTS service evaluation. Berwick (2013) states there are issues of patient safety throughout the National Health Service [NHS] as there are in every health care system. If the SOTS can improve patient safety which the midwives believe is possible, it is important that the clinicians invest in and take up the new system as well as undertaking further research to demonstrate this. Some changes to the system may be required to improve continuity, aided by combining the paperwork. Uptake of the system may be improved by adapting or removing the pain score, and investigating further why some midwives are not using the new system,

The Francis Report (2013) recognises the importance of patient safety and quality care. Most midwives felt that the SOTS can be helpful in assessing clinical urgency: this can only improve patient safety, especially when midwives feel the initial assessment is being done more rapidly than before. Even though the midwives felt that there have been improvements in patient safety there are still delays in doctor reviews, especially at senior level. The system can help to manage the workload at times and if used properly can make some midwives feel more in control of the department, making it feel more organised and efficient. This can only

be beneficial for the women and the staff who work in the department. It can be an extremely busy and stressful department to work in so anything that can improve this should be welcomed. However some midwives are still not using the SOTS at all or not consistently at least.

The questionnaire responses revealed that more than three-quarters (77%) of the midwives felt that the use of time frames and categories were moderately or largely helpful, because they gave them a clear reason for requesting doctor reviews, or help if the department got busier. If information on meeting these time frames, and categories women fell into could be collated in the future it could be beneficial in the management and organisation of the department, particularly staffing and resources, as it can accurately describe the workload. Austin and Calderon (1999) believe clinical judgment may be better than using strict protocols to assess women. Midwives felt confident to up and down categorise women in triage using their clinical judgment. As triage is a dynamic process the women need regular reassessment (Mackway-Jones et al, 2006). However some midwives found the time frames restrictive and unrealistic as often it was not possible to achieve them, particularly in times of high workload.

5.2 Philosophy of Care, Clinical Judgment and Pain Score

The problem for some midwives was that they felt they were sacrificing continuity of care: however this can mean different things to different people (Homer et al, 2008). When the midwives first referred to this in the focus groups they discussed wanting to provide holistic care to the women as this was deeply embedded in midwives' culture from their training.

This appeared to be in conflict with the ethos of triage priority based care. After analysing the data it seems they are actually discussing the continuity of the care episode. Previously one midwife carried out the whole care episode for each woman. With the SOTS system one midwife carries out the initial assessment and then passes on the care to another midwife for the rest of the assessment and some were struggling to adjust to this new approach. The SOTS was different for the staff as it standardised the care and so was more prescriptive. Midwives are autonomous practitioners (Nursing and Midwifery Council, 2004) and there was concern that the SOTS may constrain this autonomy. However in practice this has not been reported as being a problem as the respondents continued to use their clinical judgment when working with the SOTS.

The documentation was felt to be repetitive and time consuming to complete however it was useful for standardising the care and was easy to follow for staff not used to working in the department. Over 90 % of midwives reported that the paperwork would be better combined to stop repetition and fragmentation of the care as discussed in the focus groups. The informal assessment that midwives used before they started using the tool meant it would be possible to combine the paperwork for the initial assessment and symptom specific triage assessment card. In this informal assessment the midwife makes an assessment based on the telephone call, verbal and non-verbal cues, and by asking the woman what she has come in with. This means they have an initial idea of what the woman has presented with. 'The initial assessment of a woman by a midwife should include: listening to her story, considering her emotional and psychological needs, and reviewing her clinical records' (National Institute for

Health and Care Excellence [NICE], 2007b, p.24)

Both the focus group and questionnaire data confirmed that midwives felt they could sometimes (24%), usually (53%) or always (19 %) (Total=96%) use their clinical judgment when using the new triage system. Midwives cherish their clinical judgment and believe it is imperative in using the new system. It seems that if they cannot use their clinical judgment they are less likely to use the system, an issue highlighted by the response to the pain score. This is important in providing evidence based care to women and their babies using clinical skills and experience to identify clinical need and provide safe individual care for each woman (Straus et al, 2011). They also used clinical judgment to assess pain, change the category when necessary (up or down triaging the woman), and assess the need for repeat observations. For example, if the observations were normal they would not repeat them as the system stated unless something changed in there condition.

During the focus groups midwives discussed pain in a number of ways, in particular recognising, assessing and dealing with the pain. The pain score used in SOTS was negotiated, ignored, adapted, dismissed or taken at face value as the woman reported it, but overall it appeared to reduce midwives' confidence in the system and provoked a negative response from the participants. Midwives assessed verbal and non-verbal behaviour when making a judgment about the type and severity of pain (Baker et al, 2001). However, midwives need to be mindful as they can become desensitized and dismissive of pain as they often see it as a good thing every day, a positive sign of normal labour progressing.

Although medical and nursing staff are often reported not to accurately measure pain or manage pain appropriately, few studies have examined midwives' ability to assess pain (Baker et al, 2001). Midwives could be seen as experts at assessing pain as they encounter it everyday and learn early in their training to recognise the difference between normal labour pain and abnormal pain that may indicate a problem for the woman and/or the baby. Baker et al (2001) however, state midwives' and women's pain scores correlated at a moderate level but midwives underestimate severe pain when compared to the women's assessment. This is an important fact for midwives to consider when assessing women's pain. Also the lack of pain does not necessarily mean there is no clinical urgency:- the woman could be having a silent abruption and this could be critical for the woman and the baby, but may be painless. Mackway-Jones et al (2006) state there is no perfect pain assessment tool and it is best to find one that suits a particular clinical area to aid the provision of effective and timely care. If a woman has never experienced severe pain, mild pain may be considered to be the worst pain they have ever had. The cultural backgrounds of the woman and the midwife can affect how the pain is experienced and assessed. The pain score can be a subjective assessment depending on who does it, so healthcare professionals should consider their own values and beliefs before assessing a woman's pain (NICE, 2007b). The pain score should measure intensity and effects on normal function whilst being quick and easy to use. Previous experience of pain, culture and anxiety should also be considered as they can influence someone's perception of pain (Mackway-Jones et al, 2006).

Midwives felt women gave themselves a higher pain score to justify their admission to triage or so that they would be seen quicker. The women may also underestimate pain to avoid

admission or treatment. Anxiety levels of women seen in triage can be high as they are not only concerned about their own well being but that of their unborn child. Initial assessment of labour should include an assessment of the pain, including women's wishes for coping mechanism and pain relief (NICE, 2007b). Both the experience and perception of pain are subjective which makes it difficult to measure it objectively (Baker et al, 2001), which ever tool is used. This could be addressed by altering the pain score to a joint assessment between the woman and the midwife or by removing it altogether but still including some description of the pain by the midwife. Some assessment of pain is paramount in triage, as it can alert the practitioner to a problem and the need for pain relief (Mackway-Jones et al, 2006).

5.3 Management of the department

Although overall management of the department was improved (77% felt it usually or mostly improved the management of the department) some midwives were still doing the whole assessment, especially when it was quiet because there was time to see one woman at a time. The fact that some midwives were reluctant to change caused confusion and disorganisation, and this problem needs to be addressed in a number of ways. The provision of standardised priority care based on clinical need was the purpose of the SOTS. Midwives feel that by using the initial assessment method women are being seen sooner, in general. The National Audit Office [NAO] (2013) states that although most women have good outcomes in maternity there are unexplained variations in performance around the country. Perhaps the wider implementation of the standardised SOTS system into other hospitals would help

address this issue. With an ever increasing workload this is needed, giving the midwife and hopefully the mother reassurance that the mother and baby are well and can wait safely for further assessment. 86 % of midwives felt the SOTS sometimes or usually improved organisation and efficiency in the department, and the ability of the midwife to describe the workload (66% felt they could usually or always describe the workload), enabling them to ask for help if needed. However not all midwives felt this, which may suggest some changes in the system are needed.

5.4 Teamwork, communication, skill mix and training

‘Good communication between healthcare professionals and the woman and her family is essential’ (NICE, 2007b, p5)

Teamwork, good communication and skill mix are all paramount if the system is to work successfully in practice particularly during busy times and at handover. ‘Having good communication skills made the greatest contribution to being a good midwife’ (Nicholls and Webb, p426). Good communication between the initial assessment midwife and assessment midwife, in order to share and balance the roles and provide continuity of care and help each other in their roles is vital. The handover period was reported as being disorganised and confusing with no agreed method, which suggests it may also need to be standardised. This may also enhance the system’s future use. It is important to have experienced midwifery and obstetrics staff in triage. Most midwives reported the need for experienced and skilled staff,

however some suggested that using the standardised system helped staff who do not have these skills and experience to work in triage.

Gaba (2004) recommends systematic training and assessment of staff to improve safety in health care systems. The training was deemed appropriate by most midwives and a large number attended the training sessions (72 % of those who completed the questionnaire). There appears to be a need to provide more training sessions to capture staff who missed the initial training (28% of those who completed the questionnaire) and to include midwives who were not offered it previously. It was reported, however, that the system was easy to follow and training within the triage department may be possible given the right conditions. Midwives' triage skills and experience are imperative and the teaching of these skills to less experienced staff is required. Education and training are required to improve quality and safety in patient care (Greiner and Knebel, 2003). Training could include addressing issues raised from the focus groups such as recognising the importance of the initial assessment rather than continuity of care of the whole care episode in order to improve safety for all the women. Training could also focus on managing the whole department rather than just one woman as this system can help to do this, providing standardised care for everyone. Successful implementation requires assessment and evaluation of change and training is one of the essential factors in implementing change (Durlak and DuPre's, 2008; Grol and Grimshaw, 2003).

5.5 Barriers and facilitators

Change is never an easy process and overcoming the barriers to change requires a multi-faceted approach, which should also address the needs of individuals (Lozano, 2006). A review of the literature suggested that clear leadership/visionary staff, engaging and educating staff, listening to and involving the midwives and addressing workload, were important factors in aiding the implementation of this change (Spiby et al, 2013). Participating in focus groups and completing questionnaires gave the midwives the opportunity to feel their ideas and comments were important and can make a difference, and also considered their own needs. Good staff engagement can have a positive effect on staff and patients' experiences as well as having financial and safety implications, and can encourage the uptake of new systems as the staff want to it be successful (NHS employers, 2013). The midwives needed a "readiness for change" and this was recognised by the midwives when they realised the system was an improvement on what existed previously (NHS SDO, 2004). Overall these findings have demonstrated that the implementation of the new SOTS system was seen as a positive development by staff. However it depends in part on who is working in Triage at the time and this needs to be addressed in the future with further training, engagement of staff and development from the management team with these staff members. 'Service improvement is hard, takes time and presents many challenges' (Dixon-Woods et al, 2012, p876). In any period of change there are always some who are initially enthusiastic and act as change agents to pioneer new systems such as SOTS by encouraging others to join in, but also those that lag behind and are reluctant to change (Rogers, 2003). NICE (2007a) also suggest holding focus groups as they are useful in

highlighting barriers to change, and questionnaires give an insight into current practice from a large number of healthcare professionals. The focus groups have addressed the research question by examining the midwives' views and experiences in the introduction of the new SOTS and the questionnaires demonstrated the number of midwives who felt this way giving depth and quantifying midwives' views and experiences.

Change needs to be a multi-faceted approach starting with the change and the solution being recognised by the staff as required and suitable, and needs engagement of the staff and flexibility during the implementation (Dixon-Woods et al, 2012). The need for the SOTS had already been recognised from the Centre for Maternal and Child Enquiries [CMACE] (2011) report and local audit (Clarke et al, 2010) at the Trust and the clinicians recognised the need for change from working in the department. NICE (2007a) state that strong leadership and a workforce committed to improving patient care are required. Following the Francis report (2013) this is a very pertinent subject for everyone in healthcare to consider, improving patient care and safety, particularly in maternity with its increasing birth rate and costs (NAO, 2013). Some staff were involved in the development of the SOTS tool initially and others in its implementation during training. This process should not be rushed, although enthusiasm and commitment are required as well as strong leadership, the momentum of change needs to be sustained, with feedback being critical to its success (Dixon-Woods et al, 2012). Feedback will also be provided to the staff from the main SOTS service evaluation and this study as well as continuing audit of practice which NICE (2007a) recommends in changing practice. Bate and Robert (2002) also states that service improvement is much more

successful if staff on the front line are involved in the development of the tool and therefore have ownership in the change.

Rogers (2003) describes adopters of change starting with innovators and early adopters and then the majority adopting the change, finishing with the late adopters who are reluctant to change. Some late adopters are still not using the system:- this was evident in the focus groups and questionnaires, and was causing confusion and disorganisation. The main reason that the system was introduced was to standardise care and improve patient safety, so if some staff are not using it this needs to be addressed in the future. Smithson et al (2013) also found in their implementation of a standardised triage system in Canada that the maximum compliance was 90%, requiring ongoing reinforcement, education, auditing and target setting for successful implementation. This needs to be considered in future implementations of the SOTS in other hospitals and its continued uptake in the Trust. Change needs to start from within so using champions who understand the system and can support others in its use in practice and lead the change would be beneficial for any introduction into other hospitals. The NHS Change Model (2013) states that you need to encourage energy for change, addressing social, physical, spiritual, psychological and intellectual factors. The fact that the midwives have been asked their opinions about the system and are aware that changes are going to be made on the basis of their comments should help improve uptake of the system and increase enthusiasm in the future, as it will motivate them and make them feel valued. Gabbay and May (2004) suggest “mindlines’ based on clinicians’ experience and that of their colleagues change practice more than reading research in depth. This informal network may

be how the SOTS now becomes embedded in practice rather than any formed change processes that are adopted.

Barriers to the system's implementation and use in practice include:-lack of doctors, staffing levels and resources, as well as late adopters, bed blocking and telephone triage. These require serious consideration in the future as to how they can be improved or resolved. There are also external factors both financial and political, which produce barriers to change beyond our control (NICE, 2007a). In addition, the pain score, documentation and handover period could all be addressed in changes to the system.

5.6 Limitations of the study

The focus groups required a lot of organisation from the 'novice' researcher and the actual sessions could easily have produced data that was not useful to the study had they not been well managed by the experienced facilitator. Even with careful planning there was still poor attendance due to a heavy workload and lack of staff on the day, which was frustrating. Ideally focus groups should consist of between 6-12 participants to enable contribution from all but also to provide some diversity of views and experiences (Freeman, 2006). As the researcher was also a clinician at the trust there was a risk of "going native" (Burgess, 1984, Hammersley, 1993, Hellawell, 2006) but this was recognised and addressed by inviting an outsider and independent external facilitator to attend the focus groups. Having an outsider did not seem to inhibit the participants as she seemed to be accepted by the group. The researcher found that during the focus groups the boundaries between researcher and clinician were blurred (Burns et al, 2012) as the midwives were extremely enthusiastic about

talking about their views but tried to involve the researcher in the conversation. Attending the focus groups did however enable the researcher to gain insight and understanding into the research participants and the data they provided. This required discussions on a number of these issues with the researcher's supervisors at the university. Coding was done alone by the researcher; this is more often done in teams in larger studies, so is therefore a limitation of this study. However, they were discussed and clarified with the researcher's supervisors and facilitator of the focus groups.

Becoming immersed in the data from attending the focus groups and analysing the data as well as designing the questionnaire assisted in providing a better understanding of the results for the researcher, enabling thick description (Geertz, 1973). Data from focus groups needs to be interpreted in the context of group dynamics, interactive quality, role of researcher and how the participants perceived the whole exercise (Parahoo, 2006; Smithson, 2000). A number of the participants were looking to their colleagues for acceptance whilst speaking, and the hierarchy and group dynamics may have had an effect on the data (Robinson, 1999, Silverman, 2011). These focus groups seemed to have a positive effect on the staff, making them feel valued and listened to, and resulting in them using constructive criticism and problem solving skills to attempt to improve the system. Empowering the participants is useful for action research and invaluable for service improvement by encouraging criticism and solutions at the same time (Kitzinger, 2006). Berwick (2013) states it is important that staff are involved in the improvement of systems of care and the focus groups and

questionnaires were an ideal opportunity for this, as well as involving clinicians from the start in the development of the system.

5.7 The researcher's experiences of the research process

During this time the researcher learnt about the NHS and the Maternity service as a whole, as well as the department and trust the researcher was familiar with. The researcher also became familiar with research processes including the Research Governance and Ethical frameworks that exist to protect the participants and the research itself. There were potential limitations to being a clinician in the area of study ('an insider') but this was balanced with the opportunity to access the participants' views and experiences and provide an understanding of the working environment and the language that was used. This process has helped the researcher to search out best practice evidence which can then be applied when returning to clinical practice (Courtney and McCutcheon, 2010). This will be helpful in bridging the divide between research and clinical practice and will change behaviour and thinking processes forever for the researcher.

5.8 Implications for practice and future research

These are the findings from one study conducted in one unit so there is a need for further research in other trusts, if implemented, where findings may vary. There is a need to consider SOTS in the broader organisation. Some barriers exist that need careful consideration by the organisation in the future, including lack of doctors, poor staffing, lack of staff, bad environment, bed blocking and telephone advice service. NICE (2007a) recommend clinical

audit and feedback in overcoming barriers to change so it is paramount this continues with the SOTS system.

This study has highlighted issues that would not otherwise have been recognised and were not explained in the main SOTS service evaluation studies. Accessing the midwives' views and experiences using focus groups and questionnaires demonstrated that the midwives still feel they can use their clinical judgment but the pain score is an issue. They understand the priority of safety in triage and feel this is more important than the continuity of care of the whole care episode. It has also improved the overall management and organisation of the department for some. There is the opportunity to combine documentation and to change or remove the pain score, potentially improving staff confidence and uptake of the system. Because of these findings changes are being made to the SOTS system.

Management need to consider issues such as ongoing training, audit and feedback as well as addressing staff that are not using the new system, to ensure the future success of the tool. Focus groups may not be possible when implementing the SOTS system in other hospitals. However asking the midwives to complete the questionnaire could make the staff feel that their opinions are valued and involve them in the change. For future implementation in other hospitals, good training, support and 'buy in' from the staff are required for implementation to be successful. Consistent monitoring and evaluation of quality and safety and introduction of new services is required, so for this reason continuing audit and feedback of the use of the tool in practice is necessary (Berwick, 2013 and Spiby et al, 2013).

Future research is required into midwives' assessment of pain and the experiences of new users of the system. Also, for the late adopters in the use of the system, we need to discover what is making some midwives reluctant to change and assess whether the changes made to the system, if adopted, make a difference to the uptake and the staff's confidence in the tool. Due to limitations with time and resources it was not possible to examine the views and experiences of other members of the multidisciplinary team involved in the implementation and use of SOTS. Further research into the impact it has had on them could be beneficial.

6 CONCLUSION

The focus groups and questionnaires demonstrated how consulting experts in the field on their views and experiences and involving staff in service redesign and service improvement can be beneficial when introducing change. Focus groups are a useful mechanism that can be employed as part of the process of change management and the participants provided constructive criticism and contributed to problem solving. Overall the midwives felt the introduction and use of the Symptom specific Obstetric Triage System (SOTS) was a success and was well managed. Facilitators of the change included training, the involvement of staff so that they ‘bought in’ to the new system and especially the use of focus groups to problem solve. Some barriers still exist that were in place before the system was introduced and remain a challenge. Some changes are required to the system, such as combining the paperwork and adapting or removing the pain score, which may increase its uptake. Results from the study that may otherwise have been undiscovered will be used to influence design changes in the system and contribute to the success of future implementation in other trusts and embedding the system in practice in this acute trust.

REFERENCES

- Adams, S.L. and Fontanarosa, P.B. (1996) Triage of ambulatory patients. **JAMA**, 276: 493-494
- Ament, L. (1999) Quality Management Activities in the Obstetric Triage Setting. **Journal of Nurse-Midwifery**, 44(6):592-599
- Andrew, S and Halcomb, E.J. (ed) (2009) **Mixed methods research for nursing and the health sciences**. West Sussex: Wiley-Blackwell
- Angelini, D.J. and Menihan, C.A. (1996) Obstetric Triage: Selected clinical management strategies by nurse-midwives in an academic tertiary facility. **Journal of Perinatal Neonatal Nursing**, 10(1):10-26
- Angelini, D.J. (1999a) Obstetric triage: the realm of the midwife. **Journal of Nurse-Midwifery**, 44(5): 430-430
- Angelini, D.J. (1999b) Obstetric triage: the realm of the midwife: Part 2. **Journal of Nurse-Midwifery**, 44(6): 536-536
- Angelini, D.J. (1999c) The utilisation of Nurse-Midwives as providers of obstetric triage services: Results of a National Survey. **Journal of Nurse-Midwifery**, 44(5): 431-438
- Angelini, D.J. (1999d) Obstetric Triage in 10 U.S. Midwifery Practices. **Journal of Nurse-Midwifery**, 44(5): 493-509
- Austin, D.A. Calderon, L. (1999) Triaging patients in the latent phase of labour. **Journal of Nursing-Midwifery**, 44: 585-91
- Aveyard, H. (2010) **Doing a Literature Review in Health and Social Care: A Practical Guide**. 2nd ed. Berkshire: Open University Press.
- Baker, A. Ferguson, S.A, Roach, G.D. and Dawson, D. (2001) Issues and innovations in nursing practice: Perceptions of labour pain by mothers and their attending midwives. **Journal of Advanced Nursing**, 35(2): 171-179
- Bate, S.P. and Robert, G. (2002) Knowledge management and communities of practice in the private sector: lessons for modernising the National Health Service in England and Wales. **Public Administration**, 80 (4): 643-663
- Beer, M and Nohria, N. (2000) Cracking the Code of Change. **Harvard Business Review**, May-June: 133-141

Berwick, D. (2013) **A promise to learn-a commitment to act :Improving the Safety of Patients in England.** National Advisory Group on the Safety of Patients in England: Williams Lea.

Bettany-Saltikov, J. (2012) **How to do a Systematic Literature Review in Nursing: A step-by-step guide.** Berkshire: Open University Press

Braun,V. and Clarke,V.(2006) Using thematic analysis in psychology. **Qualitative Research in Psychology**, 3: 77-101

Bryman, A. "Integrating quantitative and qualitative research: how is it done?." **Qualitative research** 6.1 (2006): 97-113.

Burgess, R. (1984) **In the field: an introduction to field research.** London: Unwin.

Burns, E. Fenwick, J. Schmeid, V. and Sheehan, A. (2012) Reflexivity in midwifery research: The insider outsider debate. **Midwifery**, 28: 52-60

Carnall, C. (2007) **Managing Change in Organisations.** 5th ed. Harlow: Pearson Education Limited.

Centre for Maternal and Child Enquiries (CMACE) (2011) Saving Mothers' Lives: reviewing maternal deaths to make motherhood safer: 2006–08. The Eighth Report on Confidential Enquiries into Maternal Deaths in the United Kingdom. **British Journal of Obstetrics and Gynaecology** 118 (Suppl. 1): 1–203.

Centre for Reviews and Dissemination (CRD) (2009) **Systematic Reviews: CRD's guidance for undertaking reviews in healthcare.** Centre for Reviews and Dissemination: University of York

Centre for Reviews and Dissemination. (2013) **Database of Abstracts of Reviews of Effects.** Centre for Reviews and Dissemination. University of York

Cheater F, Baker R, Gillies C, Hearnshaw H, Flottorp S, Robertson N, Shaw EJ, and Oxman AD. (2005) Tailored interventions to overcome identified barriers to change: effects on professional practice and health care outcomes. **Cochrane Database of Systematic Reviews.** Issue 3. Art. No.: CD005470. DOI: 10.1002/14651858.CD005470.

Chenail, R. J. (2011) Learning to appraise the quality of qualitative research articles: A contextualized learning object for constructing knowledge. **The Qualitative Report**, 16(1), 236-248

Christ, M. Grossman, F. Winter, D. Bingisser, R. and Platz, E. (2010) Modern Triage in the Emergency Department. **Deutsches Arzteblatt International**, 107 (50): 892-898

Clarke, P. Bowcock, M. Walsh. and Jeffery, J. (2010) An audit of the maternity triage service at Birmingham Women's NHS Foundation Trust. **BWNFT and Local Supervisory Authority**.

Commonwealth of Learning (2004) **Practitioner Research and Evaluation Skills Training in Open and Distance Learning: Mixed Research Methods**. Commonwealth of Learning

Cooke, M.W. Jinks, S. (1999) Does the Manchester triage system detect the critically ill? **Journal of Accident Emergency Medicine**, 16: 179–81.

Courtney, M. and McCutcheon, H. (2010) **Using evidence to guide nursing practice**. Elsevier: Australia.

Critical Appraisal Skills Programme (2013a). **10 questions to help you make sense of qualitative research**. [online]. Available from: <http://www.casp-uk.net/wp-content/uploads/2011/11/CASP-Qualitative-Research-Checklist-31.05.13.pdf> [Accessed 2 December 2013]

Critical Appraisal Skills Programme (2013b). **10 questions to help you make sense of review**. [online]. Available from: <http://www.casp-uk.net/wp-content/uploads/2011/11/CASP-Systematic-Review-Checklist-31.05.13.pdf> [Accessed 2 December 2013]

Dennet, S. and Baillie, F. (2002) From here to maternity. **Health Service Journal**, 112 (5819): 24-25

Denscombe, M. (2010) **The Good Research Guide For small-scale social research projects**. 4th ed. Berkshire: Open university Press.

Department of Health (2005) **Research Governance Framework for Health and Social Care**. 2nd ed Department of Health, London [online] Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/139565/dh_4122427.pdf [Accessed 9 April 2013]

Department of Health. (2006) **Best Research for Best Health: Introducing a new national health research strategy** [online], London: Department of Health. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/136579/dh_4127153.pdf [Accessed 4 April 2013]

Department of Health (2007) **Maternity Matters: Choice, Access and Continuity of Care in a Safe Service**. London: Department of Health

Dixon-Woods, M. McNicol, S. Martin, G. (2012) Ten challenges in improving quality in healthcare: lessons from the Health Foundation's programme evaluations and relevant literature. **BMJ Qual Saf**. 21: 876-884

Durlak, J.A. and DuPre, E.P. (2008) Implementation Matters: A review of research on the influence of implementations on program outcomes and the factors affecting implementation. **American Journal of Psychology**, 41:327-350

Fitzgerald, G. Jelinek, G. Scott, D. and Gerdtz, M. (2010) Emergency department triage revisited. **Emerg Med Journal**, 27: 86-92

Francis, R. (2013) **Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry Executive summary**. The stationary office. London

Freeman, T. (2006) 'Best Practice' in focus group research: making sense of different views. *Methodological Issues in Nursing Research*. **Journal of Advanced Nursing**, 56(5): 491-497

French, W.L. Bell, Jr. C.H. and Zawacki, R.A. (2005) **Organisation Development and Transformation: Managing Effective Change**. 6th ed. New York: McGraw-Hill/Irwin.

Gaba, D.M. (2004) The future vision of simulation in healthcare. **Qual Saf Health Care**, 13(Suppl 1):i2-i10

Gabbay, J. Le May, A. (2004) Evidence based guidelines or collectively constructed "mindlines" Ethnographic study of knowledge management in primary care. **British Medical Journal**, 329:1013-1018.

Ganley, L. and Gloster, A.S. (2011) An overview of triage in the emergency department. **Nursing Standard**, 26 (12): 49-56

Geertz, C. (1973) **The interpretation of cultures: selected essays**. New York: Basic Books.

Gerdtz, M.F. Bucknall, T.K. (2001) Triage nurses' clinical decision making: An observational study of urgency assessment. **Journal of Advanced Nursing**, 35: 550-9

Gerdzt, M.F. Collins, M. Chu, M. et al. (2008) Optimizing triage consistency in Australian emergency departments: the emergency triage education kit. **Emergency Medicine Australasia**, 20: 250-259.

Gerdzt M.F. Chu, M. Collins, M. et al. (2009) Factors influencing consistency of triage using the Australasian triage scale: implications for guideline development. **Emergency Medicine Australasia**, 21: 277-285.

Greene, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. **Educational Evaluation and Policy Analysis**, 11(3), 255–274.

Greene, M. (1997) The lived world, literature and education. In D. Vandenberg (ed.) **Phenomenology and Educational Discourse**. Johannesburg: Heinemann.

Greiner, A.C. and Knebel, E. (2003) **Health professions education: a bridge to quality**. Washington: National Academies Press.

Grol, R. and Grimshaw, J. (2003) From best evidence to best practice: effective implementation of change in patients' care. **The Lancet**, 362 (11): 1225-30

Grbich, C. (1999) **Qualitative Research in Health: An introduction**. London: Sage Publications.

Hammersley, M. (1993) **Educational research: current issues**. London: Paul Chapman Publishing.

Hancock, B. Windridge, K. and Ockleford, E. (2007) **An Introduction to Qualitative Research**. East Midlands / Yorkshire and the Humber: The National Institute for Health Research, Research Design Service.

Harding, K.E. Taylor, N.F. Leggat, S.G. (2011) Do triage systems in healthcare improve patient flow? A systematic review of the literature. **Australian Health Review**, 35(3): 371-383

Harvey, N. Holmes, C.A. (2012) Nominal group technique: An effective method for obtaining group consensus. **International Journal of Nursing Practice**, 18: 188–194

Hellawell, D. (2006) Inside-out: Analysis of the insider-outsider concept as a heuristic device to develop reflexivity in students doing qualitative research. **Teaching in Higher Education**, 11(4): 483-494

Holloway, I. Wheeler, S (2010) **Qualitative Research in Nursing and Healthcare**. 3rd ed. Chichester: Wiley-Blackwell.

Homer, C. Brodie, P. and Leap, N (2008) **Midwifery Continuity of Care: A practical Guide**. Australia: Elsevier Churchill Livingstone.

Iles, V. and Cranfield, S. (2004) **Managing Change in the NHS. Developing Change Management Skills: A Resource for Health Care Professionals and Managers**. National Co-ordinating Centre for NHS Service Delivery and Organisation R&D (NCCSDO). London. [online] Available from: http://www.nhsemployers.org/SiteCollectionDocuments/Managing_change_in_the_NHS_developing_change_management_skills_aw_030309.pdf [Accessed 13 May 2013]

Iles, V. and Sutherland, K. (2001) **Managing Change in the NHS: Organisational Change. A Review for Health Care Managers, Professionals and Researchers**. National Co-ordinating Centre for NHS Service Delivery and Organisation R&D (NCCSDO). London [online]. Available from: http://www.netscc.ac.uk/hsdr/files/project/SDO_FR_08-1001-001_V01.pdf [Accessed 13 May 2013]

Jessup, M. Wallis, M. Boyle, J. Crilly, J. Lind, J. Green, D. Miller, P. and Fitzgerald, G. (2010) Implementing an emergency department patient admission predictive tool: Insights from practice. **Journal of Health Organisation and Management**, 24(3): 306-318

Johnson, R. and Waterfield, J. (2004) Making words count: the value of qualitative research. **Physiotherapy Research International**, 9 (3): 121-131

Jones, M. and Rattray, J. (2010) "Questionnaire Design". In Gerrish, K. and Lacey, A. (ed.) **The Research Process in Nursing**. 6th ed. Oxford: Blackwell publishing Ltd. pp. 369-381

Kenyon, S. and Johns, N. (2013) **The main SOTS protocol**. Unpublished

Khan, K.S. Kunz, R. Kleijnen, J. and Antes, G. (2003) **Systematic Reviews to support evidence-based medicine: How to review and apply findings of healthcare research**. London: Royal Society of Medicine Press.

Kitzinger, J. (1995) Qualitative research: Introducing focus groups. **British Medical Journal**, 311: 299-302

Kitzinger, J. (2006) "Focus groups" In Pope, c and Mays, N. (ed) **Qualitative research in health care**. 3rd ed. Blackwell Publishing, BMJ books: Oxford. pp 21-31

Krueger, R.A. and Casey, M.A. (2009) **Focus Groups: A Practical Guide for Applied Research**. 4th ed. Thousand Oaks, California: Sage Publications Inc.

Lacey A. and Luff D. (2007) **Qualitative Research Analysis**. The NIHR RDS for the East

Midlands / Yorkshire & the Humber.

Lewis, J. (2003) "Design Issues". In Ritchie, J. and Lewis, J. (ed.) **Qualitative research practice**. London: Sage Publications. pp 47-76

Loper, D. and Hom, E. (2000) Creating a patient classification system: One birth centre's experience in the triage process. **Journal of Perinatal Nursing**, 13(4): 31-49

Lozano, R. (2006) Incorporation and institutionalization of SD into universities: breaking through barriers to change. **Journal of Cleaner Production**, 14: 787-796

Mackway-Jones, K. Marsden, J. Windle, J. (eds) (2006) **Emergency triage: Manchester Triage Group**. 2nd ed. Oxford: BMJ Publishing Group, Blackwell Publishing Ltd.

Mahlmeister, L and Van Mullem, C. (2000) The process of triage in perinatal settings: clinical and legal issues. **Journal of Perinatal Neonatal Nursing**, 13(4): 13-30.

McCarthy, G. and O'Sullivan, D. (2008) "Evaluating the Literature." In Watson, R. Mckenna, H. Cowman, S. Keady, J. (ed.) **Nursing Research: Designs and Methods**. Edinburgh: Churchill Livingstone Elsevier. pp.113-123

McCarthy, M. McDonald, S. Pollock, W. (2013) Triage of pregnant women in the emergency department: evaluation of a triage decision aid. **Emergency Medical Journal** [online] Available from: <http://emj.bmj.com/content/early/2012/03/06/emmermed-2011-200752.full.pdf> [Accessed 19 April 2013]

Molloy, C. and Mitchell, T. (2010) Improving practice: women's views of a maternity triage service. **British Journal of Midwifery**, 18(3): 185-191)

National Audit Office (2013) **Maternity Service in England**. HC 794. Session 2013-14.

NHS Service Delivery and Organisational programme (2004) **Spreading and Sustaining Innovations in Health Service Delivery and Organisation**. Briefing paper, London: NHS Service Delivery Innovation.

NHS (2013) **NHS change model: everything we know about change in one place**. [online] Available from: <http://www.changemodel.nhs.uk/pg/dashboard> [Accessed 28 November 2013]

NHS Employers (2013) **Engaging your staff: the NHS staff engagement resource** [online] Available from: <http://www.nhsemployers.org/EmploymentPolicyAndPractice/staff-engagement/Staff-engagement-toolkit/Pages/Staff-engagement-toolkit.aspx> [Accessed 28 November 2013]

NHS Institute for innovation and improvement (2006-2013) **Involvement** [online] Available from:

http://www.institute.nhs.uk/sustainability_model/introduction/involvement.html [Accessed 8 July 2014]

National Institute for Health and Care Excellence (NICE) (2007a) **How to Change Practice: Understand, identify and overcome barriers to change.** [online] London: NICE. Available from:

<http://www.nice.org.uk/usingguidance/implementationtools/howtoguide/barrierstochange.jsp> (Accessed 20th June 2013).

National Institute for Health and Care Excellence (2007b) **Intrapartum care: care of healthy women and their babies during childbirth.** London: NICE

National Institute for Health and Care Excellence (2013) **NICE guidance** [online] Available from: www.nice.org.uk [Accessed 14th November 2013]

National Institute for Health Research (2006) **Research Design Service for the West Midlands. Definitions. NIHR** [online]. Available from: www.rds-wm.nihr.ac.uk/web/guest/mixed-methods-definitions [Accessed 20th June 2013]

Nicholls, L. and Webb, C. (2006) What makes a good midwife? An integrative review of methodologically-diverse research. **Journal of Advanced Nursing**, 56 (4): 414-429

Nolan, S. Morgan, J., Pickles, J. Haith-Cooper, M. and MacVane Phipps, F. (2007) Delivery suite assessment unit: auditing innovation in maternity triage. **British Journal of Midwifery**, 15(8): 506-510

Nursing and Midwifery Council (2004) **The Midwives Rules and Standards.** London: NMC

Nursing and Midwifery Council (2008) **The Code: Standards of Conduct, Performance and ethics for nurses and midwives.** London: Nursing and Midwifery Council.

O’Cathain, A. Thomas, K. (2006) “Combining qualitative and quantitative methods.” In Pope, c and Mays, N. (ed.) **Qualitative research in health care.** 3rd ed. Oxford: Blackwell Publishing. BMJ books. pp 102-111

O.Cathain, A. Murphy,E and Nicholl,J. (2007) Why, and how, mixed methods research is undertaken in health services in England: a mixed methods study. **BMC Health Services Research.** 7:85 [online] Available from: www.biomedicalcentral.com/1472-6963/7/85 [Accessed 8 July 2014]

Paisley, K. Wallace, R. and Durant, P. (2011) The development of an obstetric acuity tool. **The American Journal of maternal/child nursing**, 36 (5):290-296

Parahoo, K. (2006) **Nursing Research principles, process and issues**. 2nd ed. Hampshire: Palgrave Macmillan

Paul, J. Jordan, R. Duty, S. and Engstrom, J.L. (2013) Improving satisfaction with care and reducing length of stay in an obstetric unit using a nurse-midwife-managed model of care. **Journal of Midwifery and Women's Health**, 58(2): 175-181

Polit, D.F. and Beck, C.T. (2006) **Essentials of Nursing Research: methods, appraisal and utilisation**. 6th ed. Philadelphia: Lippincott Williams and Wilkins.

Pope, C. and Mays, N. (1995) Reaching the parts other methods cannot reach: an introduction to qualitative methods In health and health services research. **British Medical Journal**, 311 (6996): 42-45

Pope, C. Ziebland, S. Mays, N. (2006) "Analysing qualitative data." In Pope, c and Mays, N. (ed) **Qualitative research in health care**. 3rd ed. Oxford. Blackwell Publishing, BMJ books. pp63-81

Popay, J. Rogers, A. and Williams, G. (1998) Rationale and standards for the systematic review of qualitative literature in health services research. **Qualitative Health Research**, 8: 329-340.

Popay, J. Roberts, H. Sowden, A. Arai, L. Rodgers, H. Britten, N. Roen, K. and Duffy, S. (2006) **Guidance on the Conduct of Narrative Synthesis in Systematic Reviews**. ESRC, Swindon.

Pronovost, P.J. Berenholtz, S.M. and Needham, D.M. (2008) Translating evidence into practice: a model for large scale knowledge translation. **British Medical Journal**, 337: 963-5

Rebar, C.R. Gersch, C.J. Macnee, C.L. and McCabe, S. (2011) **Understanding Nursing Research. Using Research in Evidence-Based Practice**. 3rd ed. Philadelphia: Wolter Kluwer Health. Lippincott Williams and Wilkins.

Richens, Y. Rycroft-Malone, J. and Morrell, C. (2004) Getting guidelines into practice: a literature review. **Nursing Standard**, 18 (50): 33-40

Ritchie, J. Spencer, L. and O'Connor, W. (2003) "Carrying out Qualitative Analysis." In Ritchie, J. and Lewis, J. (ed.) **Qualitative Research Practice**. London: Sage Publications. pp. 219-262

Robinson, N. (1999) The use of focus group methodology-with selected examples from sexual health research. **Journal of Advanced Nursing**, 29 (4): 905-913

Robinson, K.A. Saldanha, I.J. Mckoy, N.A. (2011) **Frameworks for determining research gaps during systematic reviews. Methods Future Research Needs Report No. 2.** [online] Available from: www.effectivehealthcare.ahrq.gov/reports/final.cfm. [Accessed 4 April 2013]

Rogers, E.M. (2003) **Diffusion of innovations.** 5th ed. New York: The Free Press.

Royal College of Midwives. (2012) **Evidence Based Guidelines for Midwifery- Led Care in Labour. Good Practice Points.** 5th ed. London: The Royal College of Midwives Trust.

Sackett, D.L. Straus, S.E. Richardson, W.S. et al (2000) **Evidence based medicine: how to practice and how teach EBM.** 2nd ed. London: Churchill Livingstone.

Samangaya, R.A. Whitworth, M.K. Mason, J. Brockbank, A. and Gillham, J.C. (2010) A Maternity priority algorithm for emergency obstetric admissions. **Arch Dis Child Fetal Neonatal Ed**, 95(Suppl X):Fa 63-Fa89

Schneider, Z. Whitehead, D. Elliot, D. Lobiondo-Wood, G. and Haber, J. (2007) **Nursing and Midwifery research: Methods and Appraisal for Evidence-Based Practice.** 3rd ed. Sydney: Mosby Elsevier.

Sen, R. and Peterson-Brown, S. (2005) Prioritisation on the delivery suite. **Current Obstetrics & Gynaecology**, 15: 228-236

Silverman, D. (2011) **Interpreting Qualitative Data.** 4th ed. London: SAGE.

Smithson, J (2000). Understanding and analysing focus groups: Limitations and possibilities. **International Journal of Social Research Methodology**, 3(2): 103-119

Smithson, D.S. Twohey, R. Rice, T. Watts, M.N. Fernandes, M.D, Gratton, M.D. (2013) Implementing an obstetric triage acuity scale: interrater reliability and patient flow analysis. **American Journal of Obstetrics and Gynaecology**. October: 287-293

Spiby, H. Green, J.M. Richardson-Foster, H. Hucknall, C. (2013) Early labour services: Changes, triggers, monitoring and evaluation. **Midwifery**, 29: 277-283

Spradley, J. P. (1979) **The Ethnographic Interview.** New York: Holt, Rinehart and Winston.

Straus, S.E. Glasziou, P. Richardson, W.S. Haynes, R.B. (2011) **Evidence-Based Medicine: How to practice and teach it**. 4th ed. Edinburgh: Churchill Livingstone, Elsevier.

Streubert, H.J. and Carpenter, D.R. (1999) **Qualitative research in Nursing: Advancing the humanistic imperative**. Philadelphia: Lippincott.

Tashakkori, A. and Teddlie, C. (ed.) (2003) **Handbook of mixed methods in social and behavioural research**. Thousand Oaks, CA: Sage Publications.

Twomey, M. Wallis, L.A. Myers, J.E. (2007) Limitations in validating emergency department triage scales. **Emerg Med J**, 24(4) 477-479

Van Veen, M. Steyerberg, W. Ruige, M. van Meurs, A. Roukema, J. van der Lei, J. and Moll, H. (2008) Manchester triage system in paediatric emergency care: prospective observational study. **British Medical Journal [online]**, 337:a1501. Available from: <http://www.bmj.com/content/337/bmj.a1501.pdf%2Bhtml> [Accessed 19th April 2013]

Verbakel, J.Y. Buntinx, F. and Thompson, M. (2013) A frontline triage system across different health settings. **British Medical Journal**. 346: f2313

West, M.A. Hirst, G. Richter, A. and Shipton, H. (2004) Twelve steps to heaven: Successfully managing change through developing innovative teams. **European Journal of Work and Organisational Psychology**, 13 (2), 269–299

Whitmore, R. Chase, S. and Mandle, C. (2001) Validity in qualitative research. **Qualitative Health Research**, 11: 533-537

Wright, A. Bickerstaffe, K. and Gangadaran, K. (2011) Picking and Choosing. **Royal College of Midwives**. 5: 38-39

Zocco, J. Williams, M.J. Longobucco, D. Bernstein, B. (2007) A systems Analysis of Obstetric Triage. **Journal perinatal and Neonatal Nursing**, 21(4):315-32

Appendix 1

The main Symptom specific Obstetric Triage System Protocol- Kenyon,S. and Johns, N. (2013) (this has been adapted to protect anonymity)

Design

The aims of this audit are to evaluate the standard of documentation of triage assessment of women who presented with specified obstetric problems to maternity Triage; and to determine whether the introduction of algorithms with condition-specific decision aids for triage and a triage education programme improved triage assessment, documentation, time to being seen and immediate care and investigations. This will be done by undertaking a structured audit of maternity notes before and after introduction of this system.

Data collection from structured audit

A pilot of 20 maternity notes will be audited from July 2012 to ensure the data selected can be obtained.

It was anticipated that the notes of all women who attended Triage during a specified time period before and after introduction (June 2012 and June 2013) would be audited, but in June 2012 there were 1074 visits and June 2013 there were 1028 visits. This was too many to audit and so a power calculation was undertaken to inform the decision of how many notes to audit. Based on the estimate that 60% of women are currently seen within the appropriate time period, and that this will increase to 70% after the introduction of SOTS, 992 notes will need to be audited (496 before introduction and 496 afterwards). This will give 90% power (5% significance). The notes to be audited will be randomly selected from the total who attended. The audit will be led by experts and undertaken by the DG. No personally identifiable information will be transferred between the Trust and the University, by a process agreed by the R&D Department. In order to account for any possible differences in the data extraction that may occur between the two time periods (June 2012 and June 2013) the notes will be pulled in batches of 50 from each year.

Data will be extracted onto an audit data collection form and will include documentation of

- assessment of urgency undertaken by triage midwife
- assessment of urgency status based on expert classification
- time of arrival in Dept, initial triage assessment and subsequent time of immediate care and investigations including time seen by doctor, if required, and total time in Triage.
- immediate care and investigations undertaken will be audited against the standard agreed for each specific algorithm. This will enable us to report additional care or investigations undertaken or those omitted.
- whether women were seen by the appropriate healthcare professional and who they were discharged by.
- date of next contact, whether the woman was seen again in Triage and if so when and the level of urgency,

Outcomes

We will assess

1. The reliability of the triage system post introduction (June 2013).

This will be evaluated by comparing the level of urgency assigned by expert review with that actually assigned by the triage midwife.

2. The timeliness and standard of immediate care post introduction (June 2013) will be evaluated by determining:

- The number and percentage of women seen within the appropriate time given their level of Triage (assigned by triage midwife); This will vary depending on the level of urgency assigned, with the expectation that 100% of women triaged as most urgent (red) will be seen within their allocated timeframe and 75% of those assigned a less urgent level (orange, yellow or green) seen within their allocated timeframe. Collection of a breakdown between time of initial assessment, subsequent care by the midwife and of medical review (if required) will allow us to explore in detail where any blocks in the system occur.

- The standard of immediate care and investigations undertaken, including additional care or investigations undertaken or those omitted.
 - Date of next contact and whether the woman was reassessed in triage, and if so when.
- 3. The improvement in recognition of the urgency of treatment required (which the introduction of the triage system should increase) will be evaluated by comparison of the pre and post phases(June 2013 vs. June 2012)**

The number and percentage of women seen within the appropriate time given their level of Triage (assigned by expert). Collection of a breakdown between time of initial assessment, subsequent care by the midwife and of medical review (if undertaken) will allow us to explore in detail where any blocks in the system occur.

- The number and percentage of women in whom the standard immediate care and investigations were undertaken, including additional care or investigations undertaken or those omitted.

4. Women's experiences

- Questionnaires will be used to establish women's experiences pre and post implementation.

5. Midwives experiences/ views

This work will be undertaken by Jolene Easterbrook and will form the basis for dissertation for her MRes. Ethical permission has been obtained from the University Ethics Committee and permissions obtained from the R&D Department, who are also sponsoring the project.

Focus groups will be held with midwives to elicit their views and opinions, particularly focusing on whether or not they feel SOTS has affected their autonomy as it is prescriptive. Any findings from the structured audit of notes will also be explored.

Informed consent will be obtained. Findings from the focus groups will be used to inform the development of a structured questionnaire which will be distributed to the 80 midwives who work on rotation through Triage.

6. Maternal and neonatal mortality and major morbidity

Showing improvement in maternal and neonatal mortality and major morbidity (such as maternal admission to Delivery Suite/HDU/ITU, maternal haemorrhage (> 1 litre), neonatal admission to NICU) will probably not be possible during the implementation at the trust, as these outcomes are rare overall and the women need to have been seen in Triage in a time frame which means effects can be demonstrated. Therefore during this stage of the development we will collect data relating to possible adverse outcomes and explore methods we might use in the next phase of development.

7. Intra-operator reliability

A study will be undertaken collaboratively with a Forensic Psychologist & Clinical Psychologist and will consider:

1. Is there consistency in the ratings given by trained midwives using SOTS
2. Is there a difference in the consistency of Band 6 versus Band 7 midwives?

A series of vignettes will be devised, presenting a scenario of typical / atypical symptoms presenting at maternity triage. Together, the vignettes will cover a variety of symptoms based on the eight primary reasons for attendance (i.e., antenatal bleeding, abdominal pain, hypertension, reduced fetal movements, unwell, ruptured membranes, suspected labour, postnatal) and/or the twenty observations (determinants) that are relevant to the decision making. Eight scenarios will be tested, two each leading to the four different outcomes (i.e., red, orange, yellow or green classification).

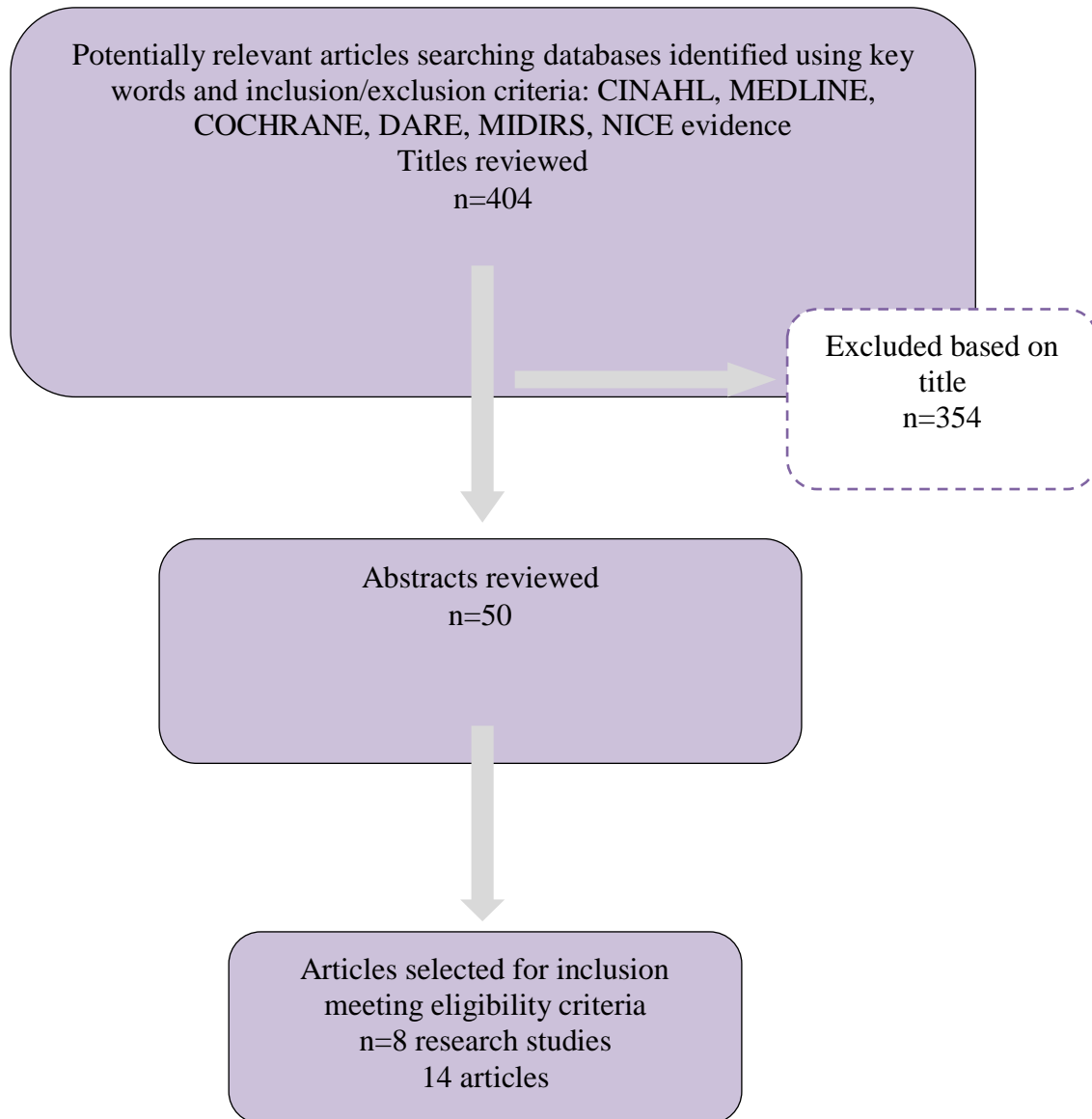
A Power analysis has been run using Study Size 2.0 to establish the required sample size using eight vignettes. For intraclass correlations, two-tailed, alpha of 0.05 and power of 0.8: 4 raters would be required to detect a large effect size ($r=0.5$), 8 raters for a medium effect size ($r=0.3$) and 30 for a small effect size ($r=0.1$). Thus, given the timelines and number of midwives using the system we will carry the study out to detect a small effect (i.e., 30 raters). This also allows a comparison between the different bandings and means 15 Band 7 and 15 Band 6 midwives each complete the eight scenarios. The midwives will complete the

scenarios during their working hours in a quiet place away from other staff and will spend only a short amount of time on each scenario, to replicate the conditions of triage. It is estimated that each scenario will take a midwife about 2-3 minutes.

A psychology student (who is in the final process of her practice Doctorate and due to submit her thesis shortly) has been identified to undertake this work supervised by the Assistant Director, Centre for Forensic and Criminological Psychology who will provide expertise in vignette development and reliability studies. The psychology student will undertake the study; ensure completion of the scenarios, enter the data and undertake the analysis (under supervision) and will obtain a Research Passport prior to commencement of the study.

Appendix 2

Search results for literature review



Appendix 3

Critical Appraisal Skills Programme For Reviewed Articles.

Article 1.

Spiby, H, Green, J, Richardson-Foster, H, Hucknall, C, (2013) Early labour services: Changes, triggers, monitoring and evaluation. *Midwifery*. 29: 277-283

1. Was there a clear statement of the aims of the research?

Yes, To identify the changes to early labour services, their triggers and monitoring

2. Is a qualitative method appropriate?

Yes, but they used mixed methods of a postal questionnaire survey and semi-structured telephone interviews

3. Was the research design appropriate to address the aims of the research?

The combination of a postal questionnaire survey and semi-structured telephone interviews meant they could address the aim of the research from two different methods prospective.

4. Was the recruitment strategy appropriate to the aims of the research?

Yes, they firstly sampled all heads of midwifery in NHS trusts in England in their jurisdiction and then carried out the semi structured interviews on a purposive sample of senior midwives

5. Was the data collected in a way that addressed the research issue?

Data was collected in 2 ways as two methods were used. They firstly carried out a pilot study

6. Has the relationship between the researcher and the participants been adequately considered?

The researchers were two professors of midwifery, a PhS student and a well being and health projects manager. Their relationship to the participants was not directly addressed but

7. Have the ethical issues been taken into consideration?

Ethical approval was not gained prior to beginning the study as after discussion with the Leeds ethics committee the study was considered a service evaluation.

8. Was the data analysis sufficiently rigorous?

Triangulation was applied through the two data collection methods; survey and interviews. Rigour was justified by the 'fittingness' or transferability of the research.

9. Is there a clear statement of findings?

Yes, A clear conclusion and implications for practice was stated.

10. How valuable is the research? It clearly highlights the need for changes to service provision to be monitored and evaluated requiring structured change management strategies.

Appendix 4

Summaries of articles that are not research studies

Author(s)	Angelini and Menihan,1996. Angelini,1999 a,b,c,d. Ament,1999. Austin and Calderon,1999. Mahlmeister and Mullem, 2000. Loper and Hom, 2000. Gerdz et al, 2008	Dennet and Baillie, 2002	Sen, Paterson-Brown, 2005)	Nolan et al, 2007	Wright et al, 2011
Title	Various	From here to maternity	Prioritisation on the delivery suite	Delivery suite assessment unit (DSAU): auditing innovation in maternity triage	Picking and choosing
Place and description of service/ project	Not studies or articles about the introduction of Triage or development of a system but a description and a discussion on the concept of triage and its introduction into obstetrics. A mixture or editorials and discussions papers	UK, Birmingham Relocation of triage service (2001) away from D/S (narrative account) -Reviewed reason for phone calls -24hr activity study, then repeated over 1 month 47-53 % on D/S not in labour or early P/N period and many phone calls non labour related 24 hr telephone helpline and 2 bed assessment area Developed guidelines and protocols	UK, London Discussing recognition of priority care and streamlining on delivery suite by triaging women effectively Not a project or service for a separate triage but discussing some important factors in the principles of triage	UK, Bradford Northern teaching hospital, Triage service called - delivery suite assessment unit Audit data 3,330 Women, 6 month period 2002 470 cases each month antenatal rather than labouring women admitted to D/S -High demand on of admissions putting more pressure of poorly staffed unit therefore pilot triage service DSAU set up separate from D/S and analysis of audit findings	UK, Plymouth Pilot project - Triage service on a D/S to manage emergency admissions (running 12 months) Unit 4900 births per year 194 non-labouring women/month -Training programme in USS, cannulation and obstetric emergency skills -Staff had

				<p>to evaluate its effectiveness</p> <ul style="list-style-type: none"> -Specific admission criteria developed Questionnaire 150 women 56 % returned 	<p>full input into designing admission pro forma and ensuring consistent communication skills</p> <ul style="list-style-type: none"> - Implemented by the staff -some initial problems (location, changed x2 then designated area on D/S)
Findings/Conclusions	<p>-Triage started in the battle fields of war and was taken up in ED and the concept began to appear in obstetric/maternity literature in the late 1990's</p> <p>-The purpose of Triage is to identify immediate health problems, regulate patient flow and utilise resources efficiently</p> <p>-Quality improvement in this area requires the development of good team work and communication, with a systematic problem solving approach, this has implications for safety, cost effectiveness and patient satisfaction</p> <p>- valid and reliable classification system needs to be developed in maternity</p>	<p>-Reduced pressure on delivery suite (D/S)</p> <p>-Reduced unnecessary admissions (to be evaluated)</p> <p>-Need a service to reduce demands on D/S and provide advice, assessment and investigations for those not in labour</p> <p>-Midwives could work autonomously and facilitate M/W led discharge</p> <p>-Staff have experience major benefits since its development – increased job satisfaction, decision making skills , reflective practice and autonomy</p> <p>Reduction in pressure on D/S increase standard of care for labouring women,</p> <p>-Not explained how they come to this conclusion</p> <p>?anecdotal reports from staff</p> <p>Outcomes to be analysed along with views of staff and</p>	<p>-Coordinating workload requires experience, good communication, team work and planning</p> <p>-Need to triage women effectively and recognise priorities</p> <p>-each women needs to get the attention she needs when she needs it</p> <p>-needs to utilise staff and mobilise extra help when needed</p>	<p>-Reduction in antenatal admissions , and admissions to D/S by 63 %.</p> <p>-Increased confidence of highly skilled midwives working in this area (Not explained how they reach this conclusion)</p> <p>- The women have increased confidence in women to obtain prompt and accurate advice/care</p> <p>-Needs to be evidenced based</p> <p>-No midwifery research on Triage in the UK</p> <p>-need for experienced midwives with good decision making skills, time management and leadership skills</p> <p>-more research is required into midwives perceptions of their role,</p>	<p>-Reduced admissions on D/S so care could be focused on labouring women/un necessary admissions</p> <p>-Requires experienced staff, good communication and teamwork</p> <p>-enjoy using detection and extended skills, and recognising when no intervention is required for “normal labouring” women</p> <p>Again this appears to be anecdotal</p> <p>-believe they have changed current practice and</p>

		women of the service (does not appear to have been published)		responsibilities and skills in triage and the effectiveness of the triage process which could help to develop a standardised risk assessment tool -further audit is required especially looking at clinical outcomes	delivering a more efficient and successful service -intend to examine women's views of the service with a questionnaire but not the staff
Themes	Concept of triage Need for a triage service Different definitions of triage in different units	-Reason for change- High demands on beds/workloads/admissions of non labouring women -Dissatisfaction with service from women and staff -Need to increase capacity and change working patterns -Need system to divert calls and non labouring women from D/S	Priority care and early recognition Triage effectively	-Innovation in maternity triage (due to demands for delivery beds and staff shortages) Reducing antenatal admission -Paper explores the audit findings and the concept of triage and its application to midwifery practice and safe midwifery practice	Agenda for change brought about the pilot study as looking for new patterns of working -Reducing inappropriate admissions -effective triage of women to streamline admissions to D/S

Examples of characteristics of the studies

Author	Zocco et al, (2007)	Samangaya et al, 2010	Molloy and Mitchell, 2010	Paisley et al, 2011	Harvey and Holmes, 2012	McCarthy, McDonald, Pollock, 2013	Paul et al. 2013	Smithson et al, 2013
Title	A systems Analysis of Obstetric Triage	A maternity priority algorithm for emergency obstetric admissions	Improving practice: women's views of a maternity triage service	The Development of an Obstetric Triage Acuity Tool	Nominal group technique: An effective method for obtaining group consensus	Triage of pregnant women in the emergency department: evaluation of a triage decision aid	Improving satisfaction with care and reducing length of stay in an obstetric triage unit using a nurse-midwife-managed	Implementing an obstetric acuity scale: interrater reliability and patient flow analysis

							model of care	
Place of Study	US, academic medical centre averaging 3600 births per year	UK, Manchester	UK, South-west England (Gloucester) District general hospital	US, Florida	Australia,	Australia, Melbourne Pregnant women in ED in tertiary maternity hospital	US Obstetric triage unit	Canada
Population, Recruitment/Inclusion n=	<p>Clear inclusion/exclusion criteria of women participants who met triage criteria</p> <p>Phase 1 400 women Phase 2-400 women N=398 patients as one woman excluded from each phase due to total triage time not being recorded</p>	<p>All admissions to obstetric triage department over 1 month</p> <p>571 admissions Red=9 Amber=15 Yellow=67 Green 472 Not Classified=8 Overclassified=23 Underclassified=23</p>	<p>Clear inclusion/exclusion criteria</p> <p>Inc-All women admitted to triage April-May 2008 Ex-Any women with adverse outcome/event, women declining participation/vulnerable women</p> <p>53 out of 120 (44%) Questionnaires completed</p>	Multi campus review (4 sites) Pre, during and post implementation statistical analysis	<p>Clinical experts from ED, obstetric and midwifery areas</p> <p>ED Dr's=10 Midwives=7 ED nurse=16</p>	<p>Audit documentation n=50 pre and n=50 post triage education programme introducing 2 symptom specific algorithms n=36 midwives (100% participation)</p>	<p>Patient satisfaction measured on a likert scale n=37 pre n=66 post implementation of nurse-midwife managed care</p> <p>LOS-standard care n=121 Post implementation n=151</p>	8 nurses randomly selected
Outcome Measure	Length of stay and waiting times	<p>- Proportions to each category</p> <p>- appropriateness of each categorisation</p> <p>- ease of application</p>	<p>Evaluation of the service by women's satisfaction levels and views of the service</p> <p>- assessment of the overall effectiveness/impact of the service</p>	<p>- Performance in assigning acuity level within 10 mins of arrival</p> <p>- Classification of acuity and meeting time frames (improve</p>	<p>-Development of priorities from clinicians for discussion in action research groups</p> <p>-priorities for change</p> <p>-creation of better treatment protocols</p> <p>- understanding of how pregnant</p>	<p>-Does triage education and condition specific algorithms improve triage assessment and documentation of pregnant women in the ED</p> <p>-Significant differences</p>	<p>Patient satisfaction-Likert scale</p> <p>LOS number of minutes women spent in triage unit</p>	<p>-Interrater reliability of OTAS</p> <p>- Distribution of patient acuity and flow by OTAS level</p>

				ments in)	women are assessed and managed in the ED			
Methods	<p>RCT-2 phases</p> <p>-Design to determine whether a triage room and/or standing orders reduce length of stay compared to existing system in a labour room</p> <p>-Women randomly selected to either Phase 1- evaluation of room assignment</p> <p>Phase 2- effect of room assignment and intervention of standing orders in common obstetric problems utilised</p>	<p>Pilot survey over 1 month</p> <p>-</p>	<p>Questionnaires of women's views</p>	<p>Literature review</p> <p>Statistical Analysis</p>	<p>Focus groups x 4 (structured face to face meetings)</p> <p>Nominal Group Technique (NGT)</p>	<p>Audit triage paperwork</p>	<p>Patient satisfaction- previously validated instrument (6 items on a 6 point Likert scale)</p> <p>LOS measured during standard care and post implementation by recording number of minutes the women spent in the triage unit</p>	<p>Interrater reliability</p> <p>Patient flow times data extracted and compared</p>
Analysis	<p>Audit sheets data analysed</p> <p>- interdisciplinary task force (midwives not included) to</p>	<p>-All red cases seen immediately</p> <p>-78% remaining cases seen within 60 min</p> <p>-60% amber</p>	<p>-SNAP survey software</p> <p>- Recognise limited baseline data for comparison</p> <p>-post positivist framework</p>	<p>Analysis of aggregate data, calculated confidence intervals and p-values, converted to % for presentation</p>	<p>Analysis of 'real' areas of priorities used to develop strategies to improve care in a participatory action research group this was not expanded</p>	<p>Data management software</p> <p>SPSS</p> <p>Descriptive statistics for each minimum standard descriptor on the audit tool</p>	<p>- Quantitative data was analysed using SPSS version 20.</p> <p>-Data Described using frequencies for</p>	

	disseminate and educate	cases seen within recommended 15 mins (remaining in 1hr 46 min) -80.6% yellow cases seen within 1hr 40min	k		upon in detail		categorical data and univariate statistics for continuous data -Likert collapse into 2 categories -Chi-square analysis used for categorical data and Fisher exact test to compare dichotomous data - Qualitative data simple content analysis	
Reliable/ Valid	y/y	Y/Y	Y/N Small response rate	Y/Y	Y/Y	y/y	y/y	Y/Y
Findings/ Conclusions	-Triage room and/or standing orders did not significantly decrease length of stay -Triage process in this setting depends on clinicians skills to assess, triage and discharge patients - Implications- collabor	- Relatively straightforward to apply -Good specificity -Further training in utilising maternity priority algorithm and emphasis on timings required	-women satisfied with waiting times and time spent with clinicians -women felt they were treated with dignity and respect -Problems with the triage environment	-Acuity should be assigned at initial encounter by nurse -Obstetric acuties should reflect pregnant related conditions and presenting symptoms -Staffing levels need to be adequate to be able to assign acuity within 10mins of arrival -There is a	-Nominal group technique is an effective and reliable data collection method, (providing relevant and reliable qualitative information) especially when doing research with clinical experts	- Documentation improved with symptom specific algorithm -triage education and symptom specific algorithms improved triage assessment and documentation -Application of algorithms may reduce clinical risk resulting from suboptimal triage of pregnant women	CNM managed obstetric unit can improve patient satisfaction and reduce LOS	-OTAS provides a reliable assessment of acuity implementation has allowed for triaging of obstetric patients based on acuity and more in depth assessment of patient flow - Standardising assessment allows for improved performance and comparison of patient care and

	ation of the team in development of specialised triage area with dedicated staff			need for a valid and reliable obstetric triage tool		presenting in ED's		flow across organisations Compliance in assignment of OTAS plateaued at 90% -Practice change needs constant reinforcement to exp nurses or may rely on own informal triaging assessments and orientation of junior staff -ongoing education, audit and target setting are vital to successful implementation
Theme S	Examining variables in obstetric triage to develop more efficient patient care delivery system in high volume obstetric unit - Regulation of Patient flow and waiting times	Priority algorithms in obstetric triage Based on well established triage systems	Assessment of pregnant women not requiring admission to D/S - Reduction of cat x admissions to D/S to allow for care of labouring women -Women's satisfaction with the service to make future improvements to the service due to new build	Introduction of an Obstetric acuity tool -Patient safety and patient flow - Education programme for staff -Acuity and time frames	Usefulness of nominal group technique to obtain priority information and group consensus Assessment of triage and management of pregnant women in the ED to create a priority list for a future action research group	Applying ATS to pregnant women in ED Condition specific algorithms and triage education affect on triage assessment and documentation	-Quality improvement -LOS and patient satisfaction -Nurse-midwife management and organisation of care	Acuity Obstetric triage Patient flow Obstetric Triage Acuity Scale (OTAS)

Appendix 5

Masters in Research Student's Protocol (this has been adapted to protect anonymity)

An examination of midwives experience of the introduction of the Symptom specific Obstetric System (SOTS) into an acute maternity care trust.

Background

Triage systems are designed to ensure the patient receives the level and quality of care appropriate to their clinical needs and the resources available are used most effectively. It involves a process of prioritizing the order in which patients receive medical attention on arrival to the Emergency Department, guiding treatment according to clinical need. Triage is usually undertaken by a nurse and involves establishing the presenting problem, undertaking a standardised physiological assessment including vital signs and results in a score being assigned based on predictors of urgency.

Triage was developed in Australia in Accident and Emergency Departments over 20 years ago and the Australian Triage System has been standard practice across Australia since 2002, with the introduction of the Emergency Triage Education Kit.ⁱ The Australian Triage System (ATS) formed the basis for the Manchester Triage System (MTS) which began in the UK in 1997ⁱⁱ. This was jointly developed by the Royal College of Nursing Accident and Emergency Association and the British Association for Accident and Emergency Medicine and differs from the other systems in that it is an algorithm-based approach to decision-making. The MTS involves the use of 52 separate flow charts that require the decision-maker to select the appropriate algorithm on the basis of the presenting complaint, and then gather and analyse information according to life threat, pain, haemorrhage, consciousness level, temperature, and the duration of signs and symptoms. The resulting level of urgency is a five level categorical scale which determines the maximum time that should pass before further treatment is required. For example, patients who were assigned the 'red' category were assessed as requiring immediate treatment; and patients assigned the 'blue' category being assessed as requiring non urgent treatment within four hours. The system attempts to standardise assessment and increase reproducibility and validity^{iii,iv} and has been mandated for use in UK Accident and Emergency Departments.

Triage of pregnant women has been identified as being less reliable^{v,vi} and this area has been highlighted as requiring development of specific guidelines and education packages^{vii}. Within the Australian setting triage algorithms for pre-eclampsia and antepartum haemorrhage for use by midwives have recently been evaluated and showed marked improvements in assessment and documentation^{viii}. Within the UK setting there is limited evidence of such a system being implemented and evaluated^{ix}.

Failure to appropriately identify and treat pregnant women within an emergency situation has resulted in adverse outcome within the UK as highlighted by the Confidential Enquiry reports into Maternal Deaths^{x,xi}. This together with information from a local audit at the trust has led to the development of symptom specific triage algorithms for the conditions identified as being the most common reasons for presentation at Maternity Triage. The Trust has some 8000 births each year and currently sees approximately 400 women each week in Triage.

Symptom specific Obstetric Triage System (SOTS) was developed by staff at the acute trust and the University. SOTS was introduced into the Triage Department at the trust on the 15th April 2013. An evaluation of this service change is being undertaken which includes an audit of whether it has influenced waiting times as well as clinical outcomes and a questionnaire of women's experiences. Prior to its introduction a training programme of the staff that will be using this system took place. As part of my Masters in Research course I wish to do a research study exploring the views and experiences of midwives into this new system (See University Ethics form attached).

Research Question-

What are the views and experience of midwives in the introduction of SOTS in an acute maternity trust?

Study Design

The aim of this study is to examine the experiences of midwives in the implementation of the new SOTS system. To do this I wish to utilise the interactions of the midwives in discussion to explore their views and then confirm these findings by sending out a questionnaire to all the midwives who work in Triage. The main focus of the study will be to explore how the implementation of SOTS has affected the autonomy of the midwives practice as their care of the women is now being prescribed and also its possible effect on communication and teamwork.

The research will add additional qualitative insights into the implementation of this service change. The intention is that the findings will indicate what best supports implementation; this information can then be used to inform future implementations of SOTS in other hospitals and development within the trust.

Recruitment and consent

Attendees for the focus groups will be recruited using posters to invite midwives who work in triage, along with a copy of the poster sent with an email from the managers on Delivery Suite asking them to contact me if interested. A reminder will also be sent after one week. Participant Information leaflets will be sent to those who contact me directly and will be widely available in the Triage Department. The midwives can contact me via email, phone or text and can also approach me personally as I will be on site during the audit process. They will be then be booked on one of the focus groups convenient to them if they are happy to participate and a letter of conformation will be

sent via email and paper copy to their pigeon hole on Delivery Suite. Written Informed Consent will be gained prior to commencing discussion on the day.

Questionnaires (to be sent once Chair person's approval has been gained from the University) will be sent to all midwives who work in triage attached to an invitation email by the managers on delivery suite asking them to complete one, but they can decline to complete them. A reminder will also be sent after one week. A poster to encouraged completion will also be in Triage and Delivery suite. Consent will be implied if participants complete to the questionnaire.

Inclusion - Midwives who work in the Triage Department at the trust (n= approximately 95). This will include midwives of varying ages, all female except for one male midwife and varying years of experience. The locations will be the Triage Department at the trust and the focus groups are planned to be held in the Delivery Suite Teaching room. They are generally fit. Professional, Degree based registered Midwives.

Exclusion-Midwives who do not work in Triage and members of the development group for the focus groups as they have been involved in the development of SOTS.

I am a midwife who works at the trust so potential participants are colleagues. However I am currently a full time student at the University and will not be approaching participants personally, I will only have access to their personal information if they contact me.

Methodology

Focus Groups

Information will be collected on the views and experiences of midwives that have used SOTS about its use in practice, and what could be improved with the system by facilitating focus groups. The focus group will consist of approximately 6-8 midwives for an hour session on two separate occasions in September. No personally identifiable information will be collected; any recordings taken will be anonymous along with all data extracts that may be used in reports. The particular area of interest is midwives autonomous practice and how they feel about their care being prescribed, along with effects on communication and team work. Information is also being collected through audit as part of the main SOTS service evaluation project to compare sets of notes from all women who attended triage in June 2012 and June 2013 to look at time frames, clinical outcomes and documentation. Questions for discussion in the focus group will also be drawn from the findings of the audit. The focus groups facilitated by an experienced researcher and myself the novice researcher. Participants can withdraw from the study at any point with no risks to themselves or employment at the Trust. However due to the interdependent nature of the data in focus groups their data will be used up to the point of withdrawal but no direct quotes will be used in reports or publications.

Midwives Questionnaire

A short questionnaire will be sent to every midwife who works in Triage (n= approximately 95 midwives) during October as they are the ones using SOTS in practice. The questionnaire will be developed from the findings of the focus groups. The questionnaire will be used to clarify midwives views and experiences of SOTS and what impact it has had on their practice (for this reason the questionnaire will be sent to the University Ethics Board for approval once developed from the focus groups). In addition basic demographic information of the midwives age group, Band, number of years qualified as a midwife and approximate number of times they work in triage in a month will be collected. The questionnaires will be anonymous but invites will be sent out ask all midwives who work in triage to complete one and then a week later sent out again to remind all midwives to complete one. They will be asked to leave the completed copy in a post box in Triage or on Delivery Suite for collection by myself, or they can put it directly in my pigeon hole. A small pilot study sending the questionnaire to the focus group attendees (n=approximately 12-16) and Development Group (DG) to check for accuracy and ease of use will be done prior to the questionnaire being sent to all the midwives. The DG already exists from the development of the new service SOTS comprising of Delivery suite Clinical Manager, Delivery suite managers, Lead for education midwife and Lead high dependency unit midwife and the researcher a Band 7 midwife sonographer.

The evaluation process is expected to start in August 2013 and end around October 2013.

Prior to this study approval will be sort from the University Ethics Committee.

Data Analysis

The focus groups will be recorded and transcribed verbatim: recordings will be destroyed once transcription accuracy has been checked. Thematic analysis will be derived after coding the data into themes.

These themes will be used to develop a questionnaire for wide distribution to midwives who work in Triage. Closed questions will be used in the questionnaire, with limited opportunity for free text. Descriptive statistics will be used to explore the results.

Data Storage

Documentation from this study will be stored in a locked filing cabinet and in a locked room at trust for up to 15 years; access will be by research personnel only.

Once transcribed and double checked by myself the recordings from the focus group will be deleted, and all data extracts will be anonymous from this point onwards.

Data will only be stored on an encrypted laptop or protected University system.

Dissemination of results and publication policy

The results of this study will be reported in my dissertation for my Masters in Research. A full summary of the findings of this study will be reported to the trust. Any publications will acknowledge the contributions of the trust and University.

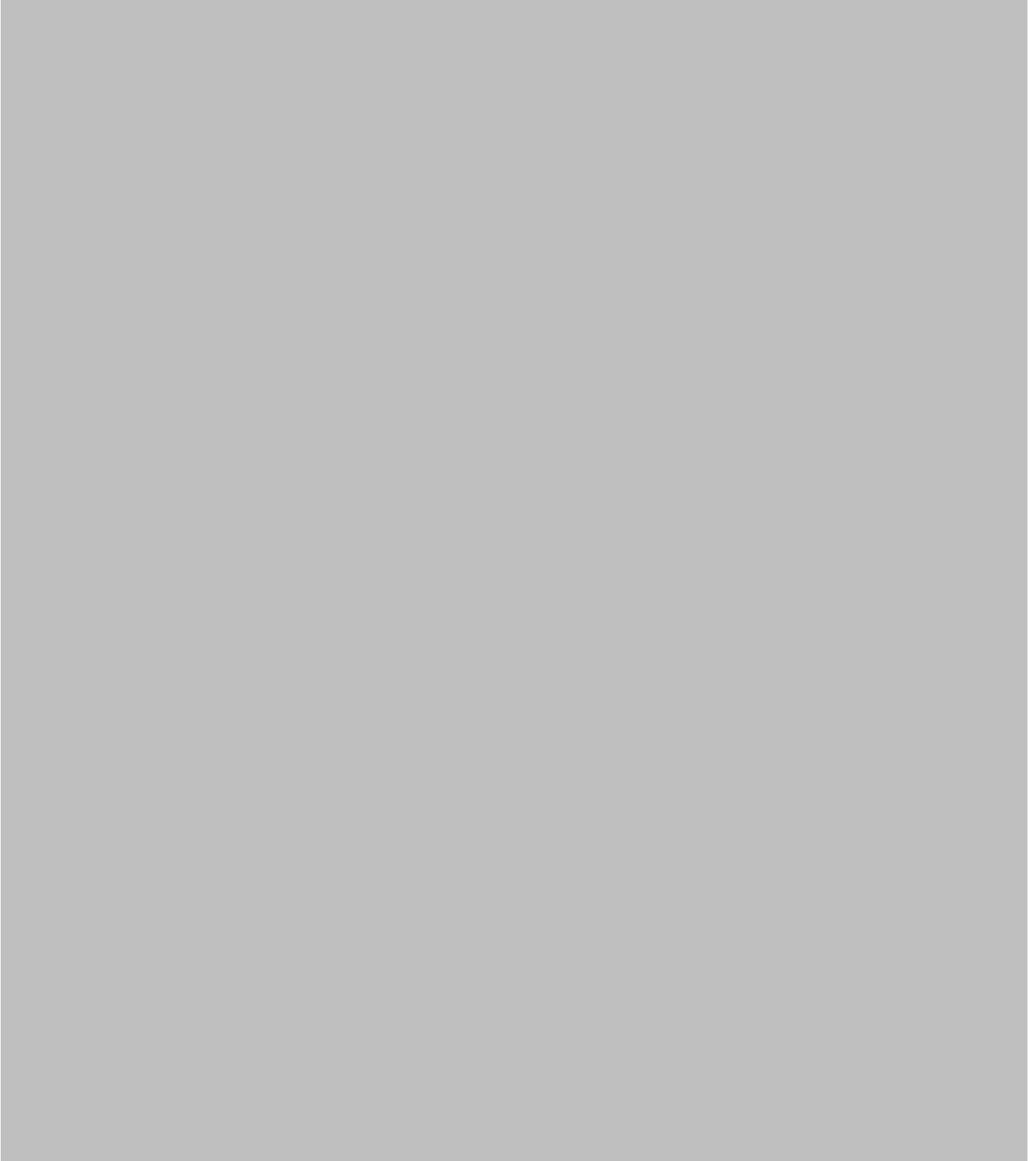
Sponsorship and funding

The trust will be sponsoring this study. I am currently a full time student at the University for a year although employed by the trust this is being funded by the National Institute for Health and Research but the study itself is not funded specifically.

References

- ⁱ The Emergency Triage Education Kit. 2007. [http://www.health.gov.au/internet/main/publishing.nsf/Content/5E3156CFFF0A34B1CA2573D0007BB905/\\$File/Triage_Workbook.pdf](http://www.health.gov.au/internet/main/publishing.nsf/Content/5E3156CFFF0A34B1CA2573D0007BB905/$File/Triage_Workbook.pdf) (accessed 13th August 2012).
- ⁱⁱ Mackway-Jones Ke. Emergency triage: Manchester Triage Group. London: BMJ Publishing Group, London, UK, 1997.
- ⁱⁱⁱ Cooke MW, Jinks S: Does the Manchester triage system detect the critically ill? *J Accid Emerg Med* 1999; 16: 179–81.
- ^{iv} Speake D, Teece S, Mackway-Jones K: Detecting high-risk patients with chest pain. *Emerg Nurse* 2003; 11: 19–21.
- ^v Gerdtz MF, Collins M, Chu M, et al. Optimizing triage consistency in Australian emergency departments: the emergency triage education kit. *Emerg Med Australas* 2008;20:250e9.
- ^{vi} Considine J, LeVasseur S, Charles A. Development of physiological discriminators for the Australasian triage scale. *Accid Emerg Nurs* 2002;10:221e34.
- ^{vii} Gerdtz MF, Chu M, Collins M, et al. Factors influencing consistency of triage using the Australasian triage scale: implications for guideline development. *Emerg Med Australas* 2009;21:277e85.
- ^{viii} McCarthy M, McDonald S, Pollock W. Triage of pregnant women in the emergency department: evaluation of a triage decision aid. *Emerg Med J* 2012 doi 10.1136/emered-2011-200752.
- ^{ix} Samangaya RA, Whitworth MK, Mason J, Brockbank A, Gillham JC. A Maternity priority algorithm for emergency obstetric admissions *Arch Dis Child Fetal Neonatal Ed* 2010; 95(Suppl X):Fa 63-Fa89
- ^x Lewis G. Saving Mothers' Lives: Reviewing Maternal Deaths To Make Motherhood Safer- 2003-2005. The seventh report on confidential Enquiries into maternal deaths in the United Kingdom. 2007. CAMACH. <http://www.cemach.org.uk/getattachment/26dae364-1fc9-4a29-a6cb-afb3f251f8f7/Saving-Mothers'-Lives-2003-2005>
- ^{xi} Centre for Maternal and Child Enquiries (CMACE). Saving Mothers' Lives: reviewing maternal deaths to make motherhood safer: 2006–08. The Eighth Report on Confidential Enquiries into Maternal Deaths in the United Kingdom. *BJOG* 2011;118 (Suppl. 1):1–203.

Appendix 6

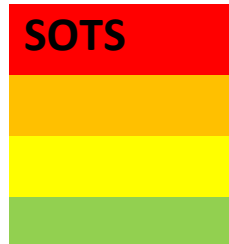


Appendix 7

Sponsor letter from the acute care trust



Appendix 8



FOCUS GROUP TOPIC GUIDE

Facilitator's welcome, introduction and instructions to participants

Welcome and thank you for volunteering to take part in this focus group. You have been asked to participate as your point of view is important. I realise you are busy and I appreciate your time.

Introduction: This focus group discussion is designed to explore your thoughts on the new Symptom specific Obstetric Triage System (SOTS). The focus group discussion will take no longer than 1 hour. I will record the discussion and once transcribed the data will be anonymised so quotes from the data can be used in reports but participants will not be identifiable. Information from these focus groups will also be used to develop a questionnaire to be sent to all midwives who work in triage. The transcript of the focus groups discussions will be sent to you, and I would be most grateful if you could confirm it is an accurate account of what was said. If you wish to withdraw from the study you can do so up to two weeks after you receive the focus group transcripts to check. I would also like to send you the draft questionnaire before I send it to every midwife for your comments.

Anonymity: Although the discussion will be audio recorded, I would like to assure you that the data from the discussion will be anonymous. The audio files will be stored safely on a password protected computer until they are transcribed word for word, then they will be destroyed. The transcribed notes of the focus group will contain no information that would allow individual subjects to be linked to specific statements. You should try to answer and comment about your experiences of working with BSOTS as accurately and truthfully as possible. I and the other focus group participants would appreciate it if you would refrain from discussing the comments of other group members outside the focus group. If there are any questions or discussions that you do not wish to answer or participate in, you do not have to do so; however please try to answer and be as involved as possible.

Ground rules

- The most important rule is that only one person speaks at a time. There may be a temptation to jump in when someone is talking but please wait until they have finished.
- There are no right or wrong answers
- You do not have to speak in any particular order
- When you do have something to say, please do so by raising your hand. There are many of you in the group and it is important that I obtain the views of each of you
- You do not have to agree with the views of other people in the group
- Does anyone have any questions?
- OK, let's begin

Warm up – ice breaker

- First, I'd like everyone to introduce themselves. Can you tell us your name and how often you work in Triage?

Introductory question

I am just going to give you a couple of minutes to think about your experience of using SOTS. Is anyone happy to share their experience?

Guiding questions

- What are your thoughts about SOTS? (What did people think/say/do?)
- What drove the positive/negative reaction? If negative, how could it be rectified?
- What do you think about the aims of having SOTS as a prescribed system including important things one must not forget during assessment? (Explore patient safety, patient outcomes, efficiency in triage and assessment, teamwork and communication)
 - Form the audit we have found the documentation is not always being completed can you explain why this might be?
- Do you think the SOTS is likely to improve the safety of assessment? If not, why not? (Similar questions for outcomes, efficiency, teamwork and communication)
- What are your thoughts on the format of the documentation? Using Algorithms to assess the patients (explore different options i.e. separate sheets, information on the backside, posters etc.)

- What are your thoughts on the content of the documentation? Is there anything that needs to come off? Is there anything you feel should be on and is not? Was the language easy to understand?
- What are your thoughts on completing the new paperwork with SOTS? Was it easy/difficult to complete? Do you find there is much duplication?
- When thinking back to how SOTS was introduced to you, are there ways that could have been introduced to make it easier/better for you to use?
- What are the main issues around actually using SOTS? Is it easy to use, if so why? If not, why not?
- What are the barriers to using the SOTS? What are the enablers?
- Did you feel comfortable with using SOTS? Do you think there is a need for further training? (If yes, explore who would need training, how and where?)
 - How would you make it easier to use/implement?
 - How do you feel about the standardising of assessments?
 - How do you find the new system, having a checklist to complete?
 - How do you feel the new system has affected your role as a midwife?
 - How has the new SOTS affected how the multidisciplinary team work together?
 - Do you feel it has affected your relationship with the women?

Concluding question

- Of all the things we've discussed today, what would you say are the most important issues you would like to express about SOTS?

Conclusion

- Thank you for participating.
- Your opinions will be a valuable asset to the study
- We hope you have found the discussion interesting
- If there is anything you are unhappy with or wish to complain about, please speak to me later
- I would like to remind you that any comments featuring in this report will be anonymous
 - Remember I will be sending you a copy of the transcribed focus group to check it is an accurate account of what has been said and a draft copy of the questionnaires prior to sending out to all the midwives. Your comments would be greatly appreciated. Thank you.

Appendix 9



Participant Information Leaflet for Midwives

Focus group project:

Project Lead:

Thank you for your interest in the focus group study exploring the views and experiences of midwives of the implementation of the new Symptom specific Obstetric Triage System (SOTS).

Before you decide whether to take part it is important for you to understand why the research is being done and what it will involve. Please take time to read this information carefully and discuss it with others if you wish. Ask me if there is anything that is not clear or if you would like more information. Please take time to decide whether or not you want to take part.

What is the purpose of the study?

The main aim of the study is to find out how midwives feel about the new SOTS system, and what their views and experiences of the system are in practice, whether it has changed working in Triage and any improvements that could be made.

We are asking midwives from the hospital about their views and experiences. The information we get from these focus groups will be used to see if, and how, we can improve the experience for midwives and the SOTS system for the future.

Why have I been chosen?

We are asking you to take part in this focus group study because you have experience of working in the triage department at Birmingham Women's Hospital and using the new SOTS regularly. We are keen to find out what you think.

Do I have to take part?

No, it is up to you to decide whether or not to take part. If you decide to take part you are still free to change your mind at any time and you do not have to give a reason. If you decide not to take part, or decide to withdraw from the study at any time (up until two weeks after the focus groups), your job will not be affected in any way. If you do withdraw your data will still be used up to the point of withdrawal but no direct quotes will be used in any reports or publications.

What will happen to me if I take part?

If you contact me directly (either by phone, text or email), I will get in touch with you by phone. I will talk to you about the project and answer any questions you may have. You can then decide whether or not you want to take part. If you would prefer not to take part, just let me know when I speak to you.

If you agree to take part, I will arrange for you to attend one of two focus group meetings on whichever date suits you. This will take about an hour, and refreshments will be provided. The focus groups will take place in the Delivery suite teaching room.

In the focus groups you will have the opportunity to discuss your views and experiences of SOTS, how it has changed working in triage and any improvements you feel could be made. It will also be used to clarify any questions that come from the audit which is part of the SOTS service evaluation taking place prior to the focus groups. It is important everyone participates and expresses their views during the discussion.

The focus groups will be audio recorded so we have an accurate record of what was said. If there are any questions you would prefer not to answer, then you do not have to and you are free to change your mind at any time. We will not put your name on the recording. Data from the focus groups will also be used to develop a questionnaire to send to all midwives that work in Triage. I will ask you to check the draft questionnaire before it is sent out to every midwife who works in triage. Anonymous extracts from the focus groups may also be used in subsequent reports.

The audio files from the focus groups will be typed up on a computer. Your name will not appear on the transcript. I will not tell anyone involved in the hospital what any individual participant said, but anonymous quotes may be used in reports to illustrate my findings. The hospital team will only see a summary of the results.

What are the possible risks or benefits of taking part?

I do not expect there to be any risks involved in taking part in this study, but benefits of taking part include giving you the opportunity to influence SOTS in the future. Please be assured that you do not have to answer any questions that you are uncomfortable with, and you can cease to participate at any time.

At the end of the focus group I will check you are still happy for me to use the information you provided. The results from the study may help us improve SOTS in the future.

Will my taking part in the study be kept confidential?

All information that is collected about you during the course of the research will be kept strictly confidential. All information that leaves the Trust will have your name removed so that you cannot be recognised from it. We are following the government's strict rules about how information like this has to be stored to keep it secure and we may need to keep it for up to 15 years.

What will happen to the results of the study?

I will produce a report of my findings which I can send you, and we may also publish the results of my findings in medical journals and at conferences. You will not be identified in any report or publication. It may be quite a while before we present information in this way.

Who is organising and funding the research?

The research is part of my Masters in Research which is funded by the National Institute for Health Research.

I am based at the University. My contact details are on the back of this leaflet and you are very welcome to contact me with any queries.

**Thank you for taking the time to read this information.
I will be in touch with you shortly,
if you contact me.**

Contact Details

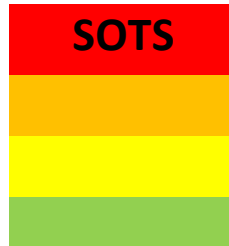
Researcher:

Trial Office:

Phone Number:

E-mail Address:

Appendix 10

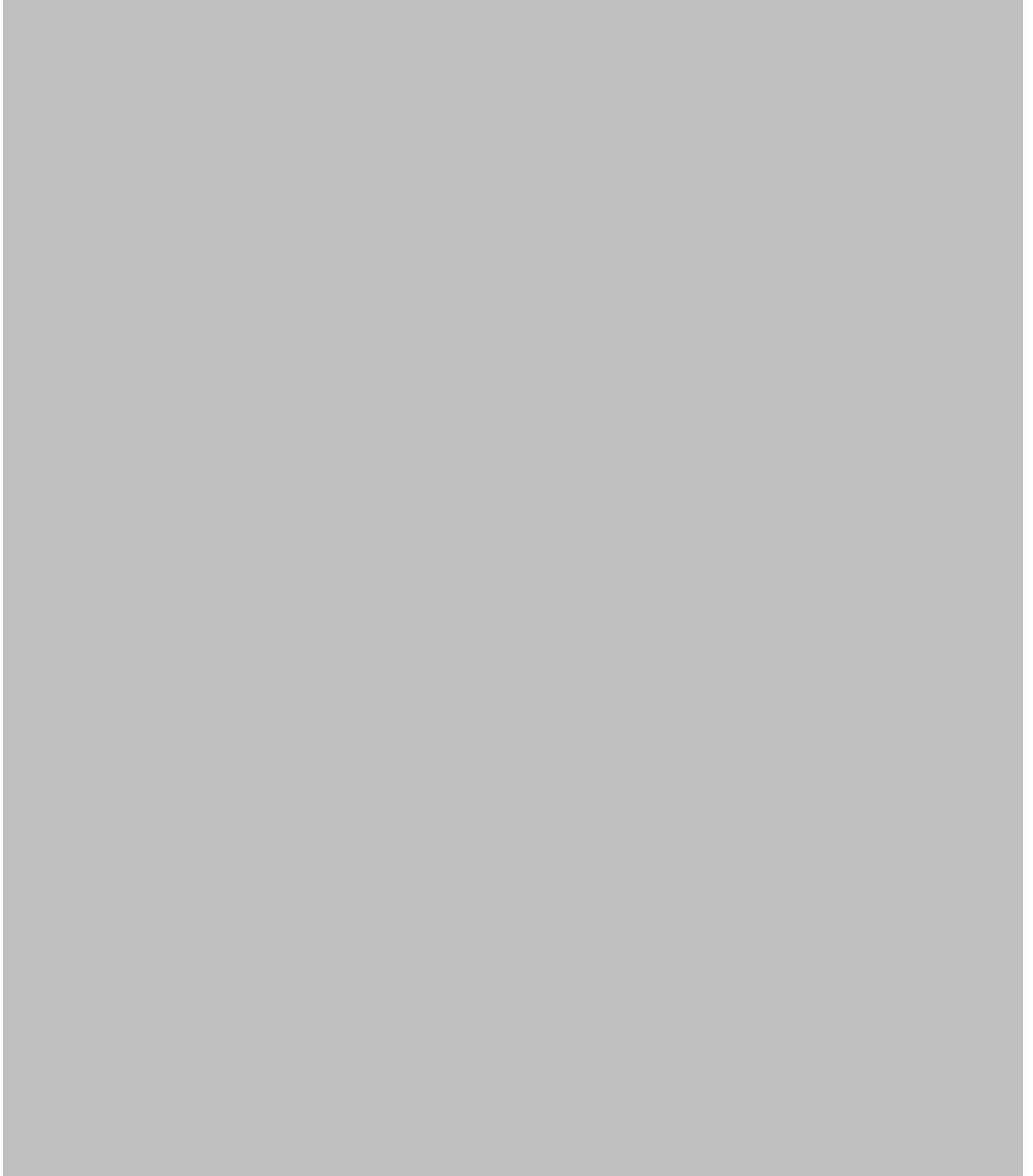


Project lead: Supervisors:
SYMPTOM SPECIFIC OBSTETRIC SYSTEM (SOTS)

Consent Form for Midwives Focus Groups

Please complete in black ballpoint pen:

Appendix 11



Appendix 12

Examples of thematic analysis steps:

Codes	Sub Themes	Themes
S-Standardisation P-Priority care/clinical need I-Initial Triage U-Urgency Q-Quick P.S-Pt Safety W-Workload (Being High) D-Delay in seeing M.C –Mothers concern S.S-Symptom Specific	Priority care Safety of the women and baby Reassurance for staff Initial assessment Confidence in the system	Patient Safety
C.C-Category Change D-Delay in seeing S-Staffing B-Barriers	Outside factors-Bed blocking, Dr's, staff shortages, telephone advice service	Categories and time frames
W.C –not women centred P.I-Patient Involvement F-Failure (mw feels like if can't do everything)	Holistic vs Priority care Culture Unable to give the care for the wholes care episode,	Philosophy of care

H-Holistic Cu-Culture	split in two	
C.J-Clinical Judgment	Still able to use clinical judgment Difficulty for some due to prescriptiveness of system Assesing the patient with observational skills and instinct/intuition	Clinical Judgment
M.D – Management of the dept Un-Triage unique I.R-Inappropriate referrals E-Environment P.E-Pre existing triage (compared to new system) S-Stress	Helps to organise dept and manage workload esp when busy Confusion and disorganisation if all not using the system	Management of the department
Pa-Pain score negotiated PaA-Pain score agreed PaI-Pain score ignored	Up triaging Unrealistic pain score	Pain Score
Fr-Fragmented care Doc-Documentation	Fragmented care Combination of paperwork	Documentation
C-Communication S-Standardisation T.W-Team Work	Good communicational skills Not communicating	Communication

	Handover	
To-Tool depends on the midwife Org-Organisational skill M.S-Midwife skills F-Facilitation	Need for skilled staff Not all using the system Experience and good organisational skills	Midwives skills and experiences

Appendix 13

QUESTIONNAIRE FOR MIDWIVES

This questionnaire will ask you some questions about the SOTS Triage system. It would be much appreciated if you could complete the questionnaire honestly- your answers will help us decide what changes need to be made to the system.

Please answer the following questions by ticking the box or circling the answer that best applies to you:

1. How often do you work in triage on average?

☐

Daily

☐

1-2 times a week

☐

1-2 times a month

☐

Never

2. Have you attended the SOTS training?

☐

Yes

☐

No

3. In your view was the introduction of the new system into triage well managed?

☐

Yes

☐

No

4. Do you feel the SOTS system:

a) Is helpful in assessing clinical urgency accurately in women who attend Triage?

<i>Not helpful at all</i>	<i>Partly Helpful</i>	<i>Moderately Helpful</i>	<i>Largely Helpful</i>	<i>Extremely Helpful</i>
1	2	3	4	5

b) Use of categories and time frames is helpful?

<i>Not helpful at all</i>	<i>Partly Helpful</i>	<i>Moderately Helpful</i>	<i>Largely Helpful</i>	<i>Extremely Helpful</i>
1	2	3	4	5

c) Allows you to use your clinical judgment?

<i>Not helpful at all</i>	<i>Partly Helpful</i>	<i>Moderately Helpful</i>	<i>Largely Helpful</i>	<i>Extremely Helpful</i>
1	2	3	4	5

d) Enables you to accurately describe the workload in triage?

<i>Not helpful at all</i>	<i>Partly Helpful</i>	<i>Moderately Helpful</i>	<i>Largely Helpful</i>	<i>Extremely Helpful</i>
1	2	3	4	5

e) Enables you to obtain medical assistance more appropriately?

<i>Not helpful at all</i>	<i>Partly Helpful</i>	<i>Moderately Helpful</i>	<i>Largely Helpful</i>	<i>Extremely Helpful</i>
1	2	3	4	5

f) Means you feel more in control of the workload in Triage?

<i>Not helpful at all</i>	<i>Partly Helpful</i>	<i>Moderately Helpful</i>	<i>Largely Helpful</i>	<i>Extremely Helpful</i>
1	2	3	4	5

g) Means the Department is more organised and efficient?

<i>Not helpful at all</i>	<i>Partly Helpful</i>	<i>Moderately Helpful</i>	<i>Largely Helpful</i>	<i>Extremely Helpful</i>
1	2	3	4	5

5. Is it safer to divide the care into immediate clinical assessment and then further care and investigations by separate midwives, rather than the previous system of care by one midwife in Triage?

☐ Agree

☐ Disagree

Any Comments

6. Any Comments

7. a) Do you agree the final pain score is actually agreed between the women and the midwife?

<i>Never</i>	<i>Rarely</i>	<i>Sometimes</i>	<i>Usually</i>	<i>Always</i>
1	2	3	4	5

- b) Do you think the pain score should also include additional elements such as ability of movement and facial expression?

☐ Yes

☐ No

Any Comments

8. Regarding the paperwork for the new system, would it be helpful to combine the initial assessment and Symptom Specific Triage Assessment Card for each condition?

☐ Yes

☐ No

Any Comments

9. Would it be helpful to develop information regarding the new SOTS system for the following?

☐ Community Midwives

☐ Local GPs

☐ Women themselves

Anyone else please state here

Please answer the following questions about you

10. What is your age group?

☐ 20-29 years ☐ 30-39 years ☐ 40-49 years ☐ >50 years

11. How many years have you been working as a midwife?

☐ <1 year ☐ 1-5 years ☐ 6-10 years

☐ 11-15 years ☐ >15 years

12. What is your highest qualification?

☐ Diploma ☐ Degree ☐ Graduate Diploma

☐ Masters/PhD ☐ Registered Midwife

13. What band are you?

☐ Band 5 ☐ Band 6 ☐ Band 7 ☐ Other

14. Is there anything else you wish to tell me about triage?

Thank you for telling us your views!

Please return this to the box in triage or delivery suite once completed

Appendix 14

Free Text Comments from Midwives Questionnaire

Question	Midwives free text comments
In your view was the introduction of the new system into Triage well managed?	<ul style="list-style-type: none"> • Only core staff were invited to training, rotational and Band 5 not included • As rotational staff, was taught how it operates by band 7 midwife but easily picked up • Training was appropriate, but not everybody trained prior to its implementation and triage too busy to be a teaching system to junior midwives • Staff all had study day fully explaining the system and had worksheets to work through which were marked and returned
Is it safer to divide the care into immediate clinical assessment and then further care and investigations by separate midwives, rather than the previous system of care by one midwife in triage?	<ul style="list-style-type: none"> • Is means women are seen quicker for initial assessment however it's a lot of work for the midwife giving further care • Unsure-think sometimes there may be a loss of continuing care and therefore a chance things any get missed. • Everyone should be seen and triaged straight away, rather than waiting in turn • I think it is very important that women are seen after arrival and allocated a category so seen appropriately whether care is continued by one midwife or divided.
Do you think the pain score should also include additional elements such as ability of movement and facial expression?	<ul style="list-style-type: none"> • Midwives should make own judgment of pain score • Pain score differs greatly between midwife and patient i.e. Patient on phone smiling but say pain score 8! • The current pain score does not reflect the pain the women is in- midwives should be allowed to use clinical judgment • I find the pain score the most frustrating part e.g. Women stating pain score is 9/10 making them red when they are actually green

Regarding the paperwork for the new system, would it be helpful to combine the initial assessment and symptom specific Triage Assessment Card for each condition?	<ul style="list-style-type: none"> • Too many repetitions on different papers and more chance of paper getting lost. If all in one booklet care would be more seamless • I think the current system works well
Would it be helpful to develop information regarding the new BSOTS system for the following?	<ul style="list-style-type: none"> • Do not feel that info re: system needs to be given to the above, but maybe info re: appropriate referrals • Women should expect triage to be like A&E (i.e. made aware there can be a significant wait)
Is there anything else you wish to tell me about triage?	<ul style="list-style-type: none"> • Smooth running of triage is very dependent on who you are working with • The system works well if followed! • Works well with good communication, organisational and teamwork • Triage is a very busy and stressful work place and should always be staff by experience competent Band 6/7 midwives comfortable working in triage • New to trust did not use old system found new one very easy to use and understand